REPORT RESUMES

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VOCATIONAL-TECHNICAL FACILITIES PROJECT. PROGRESS REPORT.
BY- VALENTINE, I.E. CONRAD, M.J.
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IN THE FIRST PHASE OF A PROJECT FOR DEVELOPING PLANNING GUIDES FOR VOCATIONAL FACILITIES, THE OVERALL DIRECTION OF A SERIES OF PLANNING GUIDES IS BEING DETERMINED. IN THE SECOND PHASE AT LEAST ONE PLANNING MANUAL WILL BE DEVELOPED TO SERVE AS A MODEL FOR THE FULL SERIES. A LOCAL WORKING GROUP COMPOSED OF THREE SPECIALISTS FROM THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION, THREE PLANT PLANNERS FROM THE EDUCATIONAL ADMINISTRATION AND FACILITIES UNIT, THREE REPRESENTATIVES FROM THE STATE DEPARTMENT OF EDUCATION, THREE LOCAL SCHOOL OFFICIALS, AND THREE ARCHITECTS MET REGULARLY THROUGHOUT THE PLANNING PHASE. CONSULTANTS MET WITH THE LOCAL WORKING GROUP IN SIX PRELIMINARY MEETINGS AND PRESENTED PAPERS--(1) "FUTURE TRENDS IN VOCATIONAL-TECHNICAL EDUCATION" BY M.L. BARLOW, (2) "THE NEED AND VALUE OF EDUCATIONAL PLANNING" BY W.F. CLAPP, (3) "VOCATIONAL-TECHNICAL CURRICULUMS AND THEIR TRANSLATION INTO FACILITIES" BY J. NERDEN, (4) "FORM AND CONTENT OF EDUCATIONAL SPECIFICATIONS WHICH WILL BEST MEET NEEDS OF THE ARCHITECT" BY J.L. REID, (5) "THE RELATIVE ADVANTAGES OF CORE VOCATIONAL-TECHNICAL FACILITIES" BY J.F. STANDRIDGE, AND (6) "THE CONTINUOUS PROGRESS SCHOOL BUILDING" BY D.W. ALLEN. THE PROCEEDINGS OF A 2-DAY INTERACTION SEMINAR WITH 33 PARTICIPANTS, VOCATIONAL-TECHNICAL FACILITY NEEDS PROJECTIONS, AND A CHECKLIST OF TENTATIVE CRITERIA FOR EVALUATING A FACILITY PLANNING GUIDE ARE INCLUDED. (MM)

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OCTOBER 67

PROGRESS REPORT: VOCATIONAL-TECHNICAL FACILITIES PROJECT

THE CENTER FOR
VOCATIONAL
AND TECHNICAL
EDUCATION

THE OHIO STATE UNIVERSITY
980 KINNEAR ROAD
COLUMBUS, OHIO 43212

The Center for Vocational and Technical Education has been established as an independent unit on The Ohio State University campus with a grant from the Division of Adult and Vocational Research, U. S. Office of Education. It serves a catalytic role in establishing a consortium to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach, and interinstitutional in its program.

The major objectives of The Center follow:

1. To provide continuing reappraisal of the role and function of vocational and technical education in our democratic society;

2. To stimulate and strengthen state, regional, and national programs of applied research and development directed toward the solution of pressing problems in vocational and technical education;

3. To encourage the development of research to improve vocational and technical education in institutions of higher education and other appropriate settings;

4. To conduct research studies directed toward the development of new knowledge and new applications of existing knowledge in vocational and technical education;

5. To upgrade vocational education leadership (state supervisors, teacher educators, research specialists, and others) through an advanced study and in-service education program;

6. To provide a national information retrieval, storage, and dissemination system for vocational and technical education linked with the Educational Research Information Center located in the U. S. Office of Education;

7. To provide educational opportunities for individuals contemplating foreign assignments and for leaders from other countries responsible for leadership in vocational and technical education.

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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PROGRESS REPORT: VOCATIONAL-TECHNICAL FACILITIES PROJECT

I. E. Valentine
M. J. Conrad
Project Coordinators

The Center for Vocational and Technical Education
The Ohio State University
980 Kinnear Road
Columbus, Ohio

October, 1967

PREFACE

In October 1966, staff members of The Center for Vocational and Technical Education and of The Administration and Facilities Unit, School of Education, The Ohio State University, began to work cooperatively in the development of Vocational-Technical Facility Planning Guides.

To date, the expertise of many vocational educators, school plant planners, architects, and federal and state department personnel has been utilized. A total of seven preliminary meetings were held in January and February in whcih these specialists helped establish guidelines to be followed in the composition of facility planning guides. This report consists primarily of an overview of activities so far completed on the facilities project, resumes of meetings held, and presentations given by invited specialists at these meetings.

Recognition is due Dr. Richard F. Meckley, The Center, principal author of the progress report, and I. E. Valentine, The Center, and M. J. Conrad, Administration and Facilities Unit, The Ohio State University, who served as co-directors of the project. We acknowledge the assistance and cooperation of Michael Russo, Assistant Director, Facilities Planning and Development Section, Program Planning and Development Branch, Office of Education. Appreciation is also expressed to Dr. A. J. Miller, Specialist in Technical Education, The Center, for reviewing the publication.

We trust this publication will be of assistance to the reader in understanding the developments and progress to date in the facilities project. It is anticipated that a model facilities planning guide and specific facilities guides will be issued later.

Robert E. Taylor
Director

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PART I

PROJECT OVERVIEW

INTRODUCTION

The following reports activities completed thus far on a project which has as its primary purpose the development of facility planning guides which will assist in the planning of vocational-technical facilities. The project is under the co-sponsorship of The Center for Vocational and Technical Education and The Administration and Facilities Unit of the School of Education, The Ohio State University.

Rationale for the Project

The need for vocational and technical education for youth and adults has become increasingly apparent to both educators and the lay public in the last several years. Responding to this need, local districts under the stimulus of state-administered federal funds have begun taking the necessary steps to make available occupational training to all who can profit by it.

The Vocational Education Act, passed by Congress in 1963, provided funds for research into the various aspects of vocational-technical education and matching funds to local districts for construction purposes. This Act (also known as the Perkins Act) provided $60 million in fiscal 1964, $118.5 million in fiscal 1965, $177.5 million in fiscal 1966 and $225 million each fiscal year thereafter. If this money is not spent wisely, there is the peril of losing this support for vocational-technical education programs which are so desperately needed by many young persons who, up to the present time, have been lamgely ignored in America's schools.

Thorough analysis of the desired instructional activities and the translation of these program elements into detailed written educational specifications can contribute to the development of more functional facilities which will better meet current and changing program needs. Research and experience have shown that planning manuals and adequate guide materials improve the quality of educational specifications and the resulting physical facilities. Such planning guides help the educational planner to organize the necessary data in order to communicate better the program needs to the architect. Planning guides prevent important considerations from being overlooked and architects welcome the resulting complete educational specifications.

A number of specific planning guides are available for planning many specific areas in both elementary and secondary schools, including a series of "self-help" planning manuals developed by the Educational Administration and Facilities Unit of The Ohio State University.

However, such specific planning guides are not available to assist in planning the great array of vocational-technical education facilities. The guide materials currently available for vocational-technical education, such as the U.S. Office of Education's Basic Planning Guide for Vocational and Technical Education Facilities and AVA's Developing Educational Specifications for Vocational and Practical Arts Facilities are excellent general guides but lack the specificity needed by local districts to adequately plan vocational-technical facilities.

Purpose and Objectives of the Project

The primary purpose of the Vocational-Technical Education Facilities Project is to produce specific planning guides or pamphlets to assist local school districts in the development of written educational specifications for the many program areas of vocational-technical education, which in turn will result in more functional facilities to meet present and future needs. Specific objectives of the project are:

1) To insure that thorough educational planning is done and detailed educational specifications are produced before architectural planning is begun.

2) To synthesize and utilize research and development activities of federal, regional, state and local agencies in the area of vocational-technical education.

3) To stimulate further research and development activities into the many facets of planning optimum facilities for vocational-technical education programs.

4) To define sharply the program elements of vocational-technical education programs and to differentiate between common and unique elements.

5) To determine and validate roles of various planning personnel.

6) To promote effective communication between educators and architects concerning vocational-technical education programs and facilities.

7) To increase interest in and commitment to improve educational planning of vocational-technical education facilities.

8) To test planning concepts, procedures and documents.

9) To diffuse knowledge and materials gained from the project.

SUMMARY OF COMPLETED ACTIVITIES

Many specific problems need to be solved to accomplish project objectives. To assist in finding solutions to the many problems related to the overall project, the project staff has and will continue to utilize the expertise of numerous vocational-technical education specialists, school plant planners, State Department and U.S. Office of Education personnel, and practicing architects.

The first phase of the project--which is underway--has been devoted to determining the overall direction of the series of planning guides and will include the development of at least one planning manual to serve as a model for developing a full series, which will constitute the second phase of the project.

A local consortium was organized and met regularly throughout the planning phase of the project. This working group was composed of three specialists from The Center for Vocational and Technical Education, three plant planners from the Educational Administration and Facilities Unit, three representatives from the State Department of Education--two from the Vocational Education Division and one from the plant section, three local school officials, and three practicing architects.

During January and February, six consultants from all over the nation met with the local consortium to present papers on various topics related to vocational-technical education and facilities planning. Following each presentation, the group discussed the paper's content and its implications for planning vocational-technical facilities. This series of meetings sharpened definitions of problems, clarified issues, delineated additional problems to be solved, and suggested possible approaches to organizing the planning guides. Each of these meetings provided for both presentation of materials and interaction between the consultant and the local working group.

On March 15 and 16, 1967, consultants in vocational-technical education and facility planning were brought together with the local working group for a full day of interaction on the problems and issues uncovered in the first series of meetings. This group assisted the project staff in the finding of solutions to the various problems and issues and in the development of guidelines for the series of guides for planning vocational-technical facilities.

The preliminary meetings held in January and February, 1967, are described in greater detail in Part II of this report. For each of the six meetings held, a copy of the presentation made by the invited consultant and a resume of important observations and implications which resulted from the group discussion are given.

Part III of the report is a description of the interaction seminar held on March 15 and 16. The Appendix gives a detailed calendar of events, lists members of the local consortium, and indicates the program and participants of the interaction seminar.

PART II

PRELIMINARY MEETINGS

RESUME OF PRELIMINARY MEETING I
JANUARY 9, 1967

The first preliminary meeting was held at Stouffer's University Inn on the date above from 9:30 A.M. until 3:00 P.M. The invited specialist and principal speaker was Dr. Melvin Barlow, Teacher Educator, University of California, Los Angeles. The topic of Dr. Barlow's presentation was "Future Trends in Vocational Education." Upon completion of the presentation, the local consortium--composed of vocational educators, school plant planners, architects, state department personnel, and vocational-technical school administrators--directed questions to Dr. Barlow, sought clarification, made pertinent observations, and drew implications for the Facilities Project. The major observations and implications are categorized and listed below.

Comprehensive Education vs. Specific Job Training.

1. In principle, there is no separation between general and vocational education.

2. Vocational education must be based upon a sound basic education.

3. Since vocational programs are geared to occupational opportunities, a person completing the program can get a job; however, he might be able to do better if some of the general aims of education are incorporated into the program.

4. Programs are organized almost solely in terms of time periods; we have not been successful in defining programs in terms of competencies desired.

5. Some educational standards need to be accepted school-wide.

6. Comprehensiveness of vocational education should not be stretched to the point where the student cannot obtain any kind of employment.

Objectives of Vocational-Technical Education

1. Vocational education programs can do many things now being done by the Office of Economic Opportunity.

2. Education generally must see that students are beginning to move

toward some vocational objective.

3. A person completing his education should be able to do two things: Some work that society wants done, and read and write so it will help him.

4. A too general approach to vocational education is not realistic in relationship to employment requirements.

5. Vocational education should give students necessary skills for initial job entry and also provide them with opportunities for up-grading these skills.

6. A vocational program may be the last opportunity the school has to teach some of the general goals and purposes that education is supposed to help the person achieve.

7. Vocational educators do not conceive of a person going to a niche and staying there; but he has to get there first and it is hoped that he has been provided with the necessary background and educational opportunities to make him mobile.

8. The original goal of vocational training is important; if it is essentially job placement, it has different implications than if it is a step to further education.

9. A community-type school can be provided which is both a secondary school and a post-high school--it can be many things to many people.

10. The control point in educational planning is service to the student.

Nature of Vocational-Technical Education

1. Education for any occupation is becoming a continuous process.

2. Training a person for a specific occupation does not necessarily stop him from his forward movement.

3. Courses should be organized in terms of competency desired rather than time periods. (Perhaps there is still time to allow this to happen in vocational education.)

4. Vocational schools must train students for more than just the occupational needs of an immediate area as people are increasingly mobile. And although common problems are shared by all committees, there is still the necessity of justifying a program on the basis of local needs.

5. Initial job entry requirements may be much more demanding than has been assumed by vocational educators.

6. There are vocational programs established for the up-grading of skills.

Problems and Concerns of Vocational-Technical Education

1. Programs are organized almost solely in terms of time periods; we have not been successful in defining programs in terms of competencies desired.

2. Subject matter teachers should be, but probably are not, the best source of information on how to use the subject matter vocationally.

3. Flexibility can be provided effectively through the absence of partitions; however, this type of flexibility is not generally desired by vocational educators. Instead, they are requesting the kinds of spaces created 30 years ago.

4. Workers going into the building industry today are not trained by anyone.

5. Communities sometimes, for financial or other reasons, refuse to allow a facility to be sufficiently flexible to allow for a day-time and night-time program and to serve a wide range of students.

6. When vocational schools become more comprehensive, there are personnel problems with respect to who teaches what, who is paid how much, and the like.

7. Research is needed to determine common knowledges among various vocational subjects or clusters of subject.

The Vocational Student

1. Vocational education is basically concerned with two groups: in-school youth and out-of-school youth and adults.

2. We are permitting students to fail in the very things we say are essential to their lives as citizens.

3. The chances of a "dropout" getting work with his level of preparation are remote and becoming more so all the time.

4. There should be follow-up on the "dropout" to provide assistance for him to work more effectively.

5. Vocational and college preparatory programs very often compete for the same groups of students.

6. The intent of the Vocational Education Act is to provide programs for students at all levels of intelligence, not just the bright one or the very dull ones.

7. The huge out-of-school group, which will increase very rapidly, must also be served.

8. The possibility of students honorably going into a vocation should not be lost.

Planning Guide Implications

1. Flexibility means that one has to continue to question educators in terms of the educational functions and purposes of a particular unit and to think very carefully about their implications.

2. Very often flexibility has come to mean "operable walls" which offer less, rather than more, flexibility.

3. A school building that is utilized at 95% of capacity during its first year of occupancy and has no allowance for expansion denotes a serious lack of planning.

4. If vocational schools are to become more comprehensive, such provisions should be made in their planning.

5. Whether a student is college or non-college bound is not really important to architectural considerations with respect to vocational facilities.

6. The school environment should somewhat approximate the student's future work environment.

7. Committees from industry are urging that students be given some concept of employment so they have some notion of the difference between working and going to school, working and playing, and so on.

8. A facility planning guide should represent the points of interest of a variety of knowledgeable people.

9. A planning guide might have some "do's" and "don'ts" to prevent it from being too generalized.

10. Two approaches might be taken: planning manuals could be developed for every discrete area of vocational education, or they might be developed for families or occupational areas.

11. One objective of the planning guides should be to generate ideas to motivate people to better planning.

12. The Facilities Project is national in scope; however, planning guides can alert users to check local and state regulations.

13. Planning guides might vary with levels of education.

14. Insofar as architectural considerations are concerned, the grade level of the student is not as important as the subject to be taught.

15. A planning guide which starts out in a general way, then narrows down to specific areas would be helpful; such a technique might detect overlapping areas and reduce the total number of areas.

16. The guide not only should supply questions, but alternative answers.

17. The Facilities Project has the purpose of trying to develop helpful building planning guides and not guides to help communities decide their vocational program needs.

18. Putting vocational families together in the planning would assist the architect in making decisions about spatial relationships of specific vocational areas.

19. Rather than an actual floor plan of an area, the architect needs to know what will be taught in the area and what the student is supposed to end up knowing.

Cooperation with Other Agencies

1. Important Document: "Report for the Consultants of Vocational Education," a panel report.

2. Advisory committees should be composed of people who can supply accurate information and answers.

3. A cooperative approach with business and industry has tremendous potential.

4. Along with state and federal funds come certain programs restrictions. Also, apprenticeship standards are imposed by labor-management committees.

5. A local group can be shown how to arrive at the answers to the questions, not necessarily by asking them the questions, but by giving them the basis for arriving at the answers.

PRESENTATION BY DR. MELVIN L. BARLOW*
AT PRELIMINARY MEETING I - JANUARY 9, 1967

"Future Trends in Vocational-Technical Education"

The architects of the vocational education movement designed this area of education as an essential part of the total program of public education, to be conducted in institutions under public supervision and control and developed on the basis of a state plan. In effect the plan reflected the state's best judgment of the most appropriate way to implement the foundation principles, as interpreted by the Smith-Hughes Act. It needed the strength of national leadership and financial support because the vocational education of Americans was a national problem--it was directly related to promoting the general welfare and providing for the national defense. In its basic aspects vocational education was concerned with two groups of people: (1) those in school, and (2) those out of school--the members of the labor force.

It is important when attempting to look into the future that we do so on the basis of being well informed about what has happened in the past, and with complete understanding of the foundation purposes of the vocational education movement. Otherwise we run the risk, under the influence of contemporary interest in vocational education supported by large amounts of money, of becoming involved in a great amount of wheel-spinning and flying-off in every direction. We must guard against following the example of the person who lost his purpose, so he doubled his effort.

The Theoretical Structure of Vocational Education

The vocational education movement was based upon foundation principles determined during the formative period of 1906-1917. These principles were interpreted by Acts of Congress in 1917, 1936, 1946, and 1963. On the basis of the national interpretation of principles, the states implemented the vocational education program.

Our theoretical structure, then, consists of:

1. Foundation Principles
2. Interpretation
3. Implementation

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* Professor of Education, UCLA, Director Division of Vocational Education, University of California

The Principles of vocational education do not change. I can find no evidence that we have actually discovered any new principles.

Because we live in a progressive society we experience continuous change. It is therefore necessary, now and then, to interpret the principles of vocational education in the light of social and economic conditions. We have already experienced four major periods of interpretation (as indicated by the four Acts of Congress mentioned above), and we can expect that the principles will be reinterpreted at various times in the furture.

The dynamism of the contemporary period calls for adequate implementation, which has always been the major task of vocational education. We are struggling desperately to find out how to plan and conduct vocational education so that we do in fact provide the greatest good for the greatest number.

Design for Implementation

You will recall that the first major study of vocational education occurred in 1914, and the second in 1962. The 1914 report of the Commission on National Aid to Vocational Education produced the basis for the Smith-Hughes Act. The 1962 study by the Panel of Consultants on Vocational Education produced the basis for the Morse-Perkins Act, (VEA'63).

The Panel was quick to realize that 46 years was too long a period between major reviews, and wisely encouraged the Congress to write into the new law a requirement for review at intervals of five years. The new Advisory Council on Vocational Education has just been appointed and will make its report to the President and Congress in 1968.

The purpose behind all of this is that by more frequent reviews we will be in a much better position to feel the pulse of contemporary social and economic direction and development. Hence we will be in a better position to see clearly the nature of implementation needed.

GROWTH PATTERNS AND PROBLEMS

The vocational education program of the future will continue to serve the two basic groups of in-school youth and out-of-school youth and adults. However, current interpretation gives a new basis for implementation.

The In-School Group

Vocational education began as a high school program. The nation had just about solved the problem of getting most of the students through the 8th grade, but even then (1917) there were many dropouts. The educational push of the period was directed toward raising the length of schooling to high school graduation. Vocational education fitted nicely into this new objective, and the theory indicated that a vocational emphasis would tend to keep students in school. This great "democratizing" force in education--the vocational program--carried with it motivation in the form of subject matter of interest to students.

Under these conditions the program grew in total enrollment from 164,186 students in 1918, to 4,566,390 in 1964. About half of the enrollement represented in-school youth, and most of these were in high school. In 1918 the enrollment consisted of students in agriculture, home economics, and trade and industrial education. The area of distributive occupations was added in 1938, health occupations in 1958, and technical education in 1959.

The distribution of total enrollment in 1964 and in 1965 was as follows:

	1964	1965
Home Economics	44.0%	39.0%
Trade and Industry	24.0%	20.0%
Agriculture	19.0%	16.0%
Distribution and Marketing	7.0%	6.0%
Technical	5.0%	4.5%
Health	1.0%	1.0%
Office	- - -	13.5%

Expressing the enrollment in vocational education in the secondary schools in comparison with the total enrollment in secondary schools indicates that in 1965 vocational education represented 22.5 percent of the total enrollment, and in 1966 the figure had increased to 27.0 percent.

Although the predictions of growth of vocational education in relation to the secondary school enrollment are encouraging, the data must be examined carefully to determine to what extent growth figures represent an actual growth in the vocational education program. (The addition of office occupations largely represents programs already in existence.)

Influence of VEA'63. Prior to the report of the Panel of Consultants emphasis had been placed on "occupations in which people worked." The new Act reordered the emphasis slightly to focus attention on "people who work in occupations." This did make a difference in the scope of the in-school group because it highlighted "all students," and even went further to point out that certain students--those with special needs--should be brought into consideration.

Data for 1965 shows an enrollment of 25,638 persons in the category of "special needs." Vocational education for this group should grow as more and more states make a deliberate attempt to develop such programs. The one drawback to appropriate development of service to this area is simply the complex nature of the group to be served.

This unquestionably requires vocational educators with special training, and very likely we have few such people available. This whole area needs investigation particularly in defining the kind of teacher required. I am not convinced that a highly skilled craftsman is needed.

The new Act focused attention also upon in-school youth at post-high school levels. Institutions to provide vocational instruction had to be created. In many states no provisions, other than four-year institutions, had been made for the high school graduate. This development has been very successful. I discount completely the importance of confusion over the name of the institution, however. Our commitment in the future is service to people at post-high school levels--the name of the institution is not significant.

A Rationale for Future In-School Development. The only way I know to approach the future is to start from vocational education's fundamental commitment. In 1917, we had a definite commitment to conduct a part of the vocational education program for in-school youth. At that time it meant high school youth. There was no particular concern for "youth with special needs." If the term had an interpretation then it probably meant youth with physical or mental handicaps. Such youth were generally not in high school. Besides, other provisions had been made for rehabilitation of physically handicapped persons.

Society changes much in a half-century, but we are still committed to serve in-school youth. The principle is the same but our interpretation is different. Now, in-school youth means youth in-school in post-high school institutions (but excluding baccalaureate programs), in addition to the high school youth. Furthermore, the interpretation definitely includes youth with special needs now necause they are in school. The interpretation of the word "special" has changed significantly. It does include the physically handicapped; it does include the educable mentally retarded; but it also includes a variety of students whose needs might be termed social, cultural, ethnic, or economic. Presumably, it would also include very bright and talented youth whose vocational needs are also special.

High School or Post-High School? I can see very little justification in contemporary discussion for devoting time to consideration of whether vocational education should be conducted in high schools or in post-high school institutions. Obviously it must be in both, for the present and near futrue. When all students stay in school through what we know today as the 12th grade, and when all students continue beyond that point it may be reasonable to delay some phases of job preparation until the educational experiences of the equivalent of the 13th or 14th grades. This point of view is in keeping with the principle that instruction is given close to the time of anticipated use.

But even if this seemingly utopian idea of all students continuing through the equivalent of grades 13 and 14 is reached, we cannot ignore aspects of vocational preparation in earlier years. Although the image is indistinct, I think I see in my crystal ball the generation of a view that recognition of vocation in the lives of people is important. If this view is real we can expect a new emphasis upon occupational significance in education. This suggests a new role of the area of vocational guidance and very likely a rise in attention to the vocational aspects of subject matter in general.

So What? For in-school youth I predict:

1. Continued growth at the secondary level to 50 percent of the secondary school enrollment by 1975.
2. Rapid growth of enrollment for in-school youth in post-high school institutions. Obviously the percentage of students in vocational education will vary depending upon the nature of the institution--those created principally on the basis of vocational objectives, reaching 100 percent.

The Out-of-School Group

For out-of-school youth and adults, the expectation may be summarized as (1) a much larger growth in enrollment, and at a faster rate, and (2) a much larger coverage of occupations, and with a closer relationship to labor market needs. However, such a summary does not identify influences leading to these generalizations.

As indicated previously, about half of the total vocational education program has been devoted to the out-of-school group. At first this group was identified as an employed group who needed to extend their occupational competency in order to compete more effectively in the labor market. During the depression of the 1930's, unemployed persons were added to the group. (Note the influence of social conditions.) During World War II an array of new occupations was added and vocational educators were involved in new instructional experiences. Technological influence of the late 1950's the "Panel" and its report, and the Morse-Perkins Act (VEA'63), provided a pattern for total service to the out-of-school group: employed, unemployed, those needing retraining, and ethnic groups with special problems. In short, an emphasis was placed on a total service to the out-of-school group. (Note also, that even these new things are only interpretations of principles established long ago.)

The way is paved in terms of flexibility of the vocational education Acts to meet any and all needs of the out-of-school group. Making this a reality is dependent upon the future development of the following:

1. A feeling of mutual dependency by management, labor, and education.
2. Interaction of the community and the school so that school resources are tapped to a maximum for the social and economic benefit of the community.
3. Up-to-date knowledge in the school of the status and trends of occupations and employment.
4. The degree to which the school takes the initiative to find vocational needs and do something about them.

Future development is obviously dependent upon a number of other items, but the four indicated above are essential to future growth.

Need for Continuing Education. Educational theorists have been telling us for years that we have entered upon an era where continued employment depends upon continuing education. The future portends a vast expansion in programs for out-of-school youth and adults--in fact the economy depends greatly upon this expansion. Our present ratio of in-school and out-of-school enrollment is approximately 1:1, it should increase to a ratio of 1:5, or larger. Ultimately the entire labor force will become involved in self-development programs, many of which can be provided in the vocational education program for out-of-school youth and adults.

Roadblocks. Future development and growth rates are dependent upon one problem that few people have taken the trouble to write about. There is no actual commitment in education to provide for vocational needs.

Our theory provides adequately for vocational education; our practice largely ignores it. A part of the futrue revolution in education must include a deep and abiding, sincere, desire upon the part of educators and society to make vocational goals of in-school students, and out-of school youth and adults, an essential item of practice.

A second deterrent to growth, which arises out of the first item, is the recent involvement of other government agencies and private industry in the area of vocational education.

The third roadblock may be described as unfortunate publicity. There are no vocational education programs that are not matched by known employment needs. (I am mindful of the traditional non-gainful position of Home Economics, but this is a special argument.)

Our problem is to replace ignorance of vocational education with the facts. Our success story is scarcely known. Senator Morse pointed this out on the floor of the Senate late in 1963, when he said that the American people still do not understand vocational education.

AUTOMATION

We are recovering, I think, slowly from being scared out of our socks by the automation bugaboo. We seem to be able now to look the monster in the face and examine him to find out what makes him tick. The shock treatment of automation developed when fantasy suddenly became reality. Fear developed when we asked questions and could not find plausible answers--automation appeared as a threat to a comfortable pattern of living. However, automation is really routine in vocational education and we have lived with it a long time. We have experienced many changes over the years and thanks to the foresight of predecessors, our program was cast in a mold capable of making adjustments. Because we are concerned with people who are preparing to work, initially or more

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efficiently, we keep in touch with occupational change. In 1917 we did in fact have instructors in charge of classes in vulcanizing. But there is no longer a significant labor market for this skill and the classes have gone by the way of other obsolescent programs.

To belittle automation as a factor of influence on vocational education would be pure folly. We are somewhat better off now than a few years ago, because we are beginning to have facts, figures, and trends that provide an element of understanding. However, at the same time we are dealing with a tremendously complex, dynamic occupational structure. Automation has been selective in the way it has influenced occupations. We see tremendous contrasts such as great influences on the machine tool industry and baking, but relatively little effect on food service. The fact is that automation does develop wherever human ingenuity can provide the appropriate environment. The impact of automation will continue to grow, but even now it is doubtful that automation, as such, has had any real impact on the lives of most people.

Despite incomplete clarity concerning the nature, extent, direction, scope, depth, and rate by which we are being influenced by automation we can develop some strong feelings about the course ahead. That pounding in our ear is automation's alarm clock telling us to get up and move out into a new day.

Some Signals Intercepted

Automation will have significant effects upon the environment with which we work and in which we work. Let's look at both.

The "with which" environment obviously is the occupational world for which we are providing better qualified workers. We must:

1. Obtain and make use of occupational data. The educational theorist, the educational planner, and the educational operator need such data. We can't rely solely on the survey, but need additional "instant information," e.g., employment data provided by TV--like flight schedules at the airport perhaps--representing current estimates. This would be a continuous record of statistical data--the best guess at the moment. The equipment providing the information could have a print-out feature for a permanent record whenever necessary.

We can no longer plan and adjust vocational education programs on the basis of information out of date by the time we receive it. Although I cannot see how we can provide "instant" vocational programs to match the "instant" information, ww must become better informed about the dimensions of our task.

2. Develop buildings and facilities that are functional in relation to the dynamics of the program. Concrete and steel boxes have a non-flexible quality that may get in our way in the future as we attempt to adjust space to fit changing needs and changing kinds of equipment. Evidently the flexible building design depends greatly upon our ability to define the possible uses of the space involved. This requires a much closer relationship of the vocational educator

and the architect and builder.

Some of our imaginative people have been giving attention to these problems of the future--Mike Russo, U.S. Office of Education is a good example. His investigations show a number of possibilities, some of which are so obvious that no one thinks about these departures from tradition.

3. And, obviously others.

The "in which" environment is less obvious and needs a thorough "brainstorming" in order to provide insight into the nature of the total problem. Two examples will illustrate the nature of the environment.

1. Upgrade our teaching staff. This is a continuous task and applies to both educational and occupational competency. Our teachers must be better and more broadly educated in general, and must achieve higher levels of subject matter competency. In-service training with multiple dimensions must be provided on purpose and on the basis of careful planning. Leaving the task of self-development entirely up to the individual has not worked out for all teachers.

2. Provide leadership experiences. We have been playing footsie with this element for several years. Our efforts thus far, successful though they may be, are not adequate for the future. We must understand that leadership and administration are not synonymous terms. We must learn how to encourage and develop persons to assume strong leadership roles in some phase of vocational education; it is not essential that they also administer a phase of vocational education.

A Point of Reference

Automation and all other influences affecting our present situation must keep all vocational educators on their toes. A new level of sophistication must develop. The quality of the vocational educator's product is influenced by his environment. Many forces, including automation, are making that environment different; the vocational educator must know this and do something constructive about it.

THE R & D WONDERLAND

Research and development is an honorable and essential element of progress in business and industry--it is still on trial in vocational education. Why?

Vocational education developed in a research-starved environment for 50 years and then suddenly devoted millions to research. We needed to know about everything, and we set out in high gear to find out. The trouble is that it takes a little bit of time to find out what we know, and even longer to understand it and decide upon courses of action. Research in vocational education is not very healthy at the moment, but the problem is time--and perhaps communication.

The facts in the R & D case are that no one seems able to present a status report of activities showing research planned, in process, and completed. Ignorance of the actual situation produces some strange ideas.

I can accept on faith that our research program has generated much good. However, the future must produce some orderly scheme for an attack on the unknown in vocational education. It must be possible to develop a "grand design" for total research in vocational education.

I am mindful that a case can be made for research along several lines. I am also mindful that our ultimate objective of such research could be quality of instruction. The research of the future must produce an immediate use value to enhance quality in and related to the instruction process. It is one thing to conduct and report research; it is still a another to put the truths of research into practice. The "planning guides" of the project we are concerned with today are attractive because we are moving toward providing the directions to effect change.

SOME IMPLICATIONS

and a Summary

The Facilities Project has many fine points in its favor. The product of this study is needed in vocational education. The project can ease the problem of making needed changes and facilitate introduction of new programs and improved standards.

However, as the project is being conducted we must not lose sight of a number of general forces that have ultimate control of the program. These forces are at work now. They will be at work in the future. It is possible for us to produce planning guides of the finest quality and not have a program to use them in. I am not painting a black picture of the future. The potential is excellent, in fact we have never had it so good in vocational education. But, as we doctor specific defects, we must keep track of where we hurt in general.

1. The public at large does not understand the program and regards it as "permissive" rather than "essential."
2. In most schools vocational teachers are in a minority group. They have minority group ills and they exhibit minority group characteristics.
3. Instructors of general programs in schools do not see any relationship to vocational preparation and are oblivious to any possible contribution they can make.
4. Emergent leadership is too slow in vocational education; there is even a reluctance toward self-development among vocational education personnel.
5. Our traditional and essential partners in this venture are labor and management. I suspect that these resources are not adequately used and that the trend may even be negative.

6. Our relationship to the changing occupational structure had been far from perfect and the future demands closer ties.
7. There is a lack of creativity and innovation in our instructional process.
8. And, perhaps, there are other hurts.

As indicated above, the Facilities Project does not direct its attention to the solution of these problems--I'm not recommending it should--but I am suggesting that the effort be conducted in an atmosphere of deep concern for some of the forces that will have a major effect upon molding our future.

There are two projects on the horizon that will tend to get at some of the aspects of the general problem. These are:

1. The Task Force on Vocational and Technical Education, of the Education Commission of the States (Compact for Education).
2. The report of the Advisory Council on Vocational Education.

But a hundred such reports will not solve the need for the Planning Guides.

RESUME OF PRELIMINARY MEETING II
JANUARY 18, 1967

The second preliminary meeting was held at The Center for Vocational and Technical Education on the date above from 10 A.M. until 3 P.M. The invited specialist and principal speaker was Dr. W. F. Clapp, former Associate State Superintendent of Public Instruction, Michigan. The topic of Dr. Clapp's presentation was "Need and Value of Educational Planning." Upon completion of the presentation, the local consortium composed of vocational educators, school plant planners, architects, state department personnel, and vocational-technical school administrators, directed questions to Dr. Clapp, sought clarification, made pertinent observations, and drew implications for the Facilities Project. The major observations and implications are categorized and listed below.

Vocational Education and Vocational Students

1. Technical and semi-professional education will be and probably should be taken out of the typical secondary school and offered during a thirteenth and fourtheth year rather than having such students side by side with relatively less mature youngsters in the upper grades of high school.

2. Our present technology indicates that institutions at the post-high school are going to be involved in a great retraining. The future may see a great amount of retraining of school dropouts who will be provided with educational opportunities that are appropriate to them.

3. There will be a great deal of retraining of adults who are forced out of work because of changes in technology.

4. There are many different variations of cooperative programs between industry and vocational-technical schools. For example, in some cases, students receive training instruction in industry and theory instruction at school; in other cases students receive instruction on basic machines at school and then spend their senior year entirely in industry.

5. Cooperative programs should be limited until vocational schools themselves can adjust to industry schedules in order to provide industry with employees on a year-round basis.

6. Employers never say that vocational-technical school graduates know entirely too much.

7. Although representatives from industry sometimes indicate the vocational schools need only give a boy enough training to keep him out of the way of machinery, the truth is that vocational schools can more readily place students if they are more thoroughly prepared. Such adequate preparation requires enough and the right kinds of equipment.

8. Research that may point out common and unique elements in vocational education curricula is important and needed.

9. One of the biggest problems faced by vocational education is its image. Many parents are reluctant to have their youngsters enrolled in vocational education programs because of possible undesirable associations with other youngsters.

10. The intelligence of students in vocational educational programs ranges widely; such a condition is often a source of many organization and discipline problems.

11. The present trend is for vocational schools to become more self-sustaining with their own libraries, resource centers, and laboratories.

Other Buildings as Planning Models

1. There is a danger in visiting other buildings in the planning phase; it can stop creative thinking which is needed to provide educational facilities which best meet local requirements. When planners visit other buildings, they should wait until these buildings have been in operation for a long enough period of time for building defects to become evident.

2. Planners, in their visits to other buildings, should have the opportunity to hold confidential or private conversations with various occupants of its building who are in a position to know the strengths and weaknesses.

3. There is a real danger in a good building feature becoming a model for everyone to follow regardless of local needs.

4. Before planners begin to go out and visit other buildings to see what has been done before, they should have a good understanding of the educational program desired on the local level.

5. Once planners are familiar with the local requirements they can rarely find anything else in other buildings that fulfill all of these requirements.

The Facility Planning Process

1. There should not be vocational-technical centers in districts which have neither the population or the financial resources to operate good programs now and/or in the future.

2. Educational specifications are an attempt to give the architect all the essential information that he must have to understand what the architectural problems will be, the educational problems to be solved, and the limitations under which he must work.

3. States which have rigid regulations on how school buildings are to be built are states in which you find buildings which are twenty years old before their doors are open.

4. One problem faced in vocational-technical facilities, especially for newly-formed districts, is the absence of the local professional staff. However, if such staff is not available, planners should get the local participation on the part of citizens, on the part of educators, and on the part of technical consulting specialists. One successful planning technique employed was asking industry representatives the question: We are going to build to train perspective employees for you; what kind of training would you like people coming from such a school to have?

5. Vocational-technical schools should be educational centers and not just job placement centers.

6. The hiring of the professional staff before building completion is certainly an ideal goal. At least, some sort of an arrangement should be made to provide a skeleton staff to work with building planners.

7. The fact that you do not have funds coming in for a number of months after the bond issue and operating levy have passed creates a problem.

8. A skeletal staff may not be useful if all vocational areas to be included in the program are not represented.

9. In some cases, finding qualified vocational education personnel is more difficult than finding the money to pay them.

10. Although participation is important in planning process, someone has to make final decisions on what the facilities will be like.

11. It is all right for planners to insist that certain standards and criteria be followed, but planners should not prescribe to the architect how to do it and what kinds of materials to use.

12. The function of the educational consultant in the planning of vocational-technical facilities should not be to take over the functions and responsibilities of local officials, but to try to help them accomplish their task in a better way in order that they will not have to hire a consultant again.

13. In those instances where planners have made firm decisions on such things as building materials, they should so inform the architect and not try to deceive him.

14. In the planning of vocational-technical education facilities, care must be taken to avoid undue influence of the building design on the part of the pressure groups or particular vocational departments.

15. Teacher committees which include teachers at all levels (elementary, junior high, and senior high) are often effective because the pettiness of power groups at particular grade levels or schools is avoided.

16. In the planning for vocational technical facilities it might be advantageous to have a broad range of professional educators involved.

17. There is presently a trend in vocational-technical education whereby a youngster goes to school part time and works on a job part time. This could mean that more attention needs to be devoted to classrooms in vocational technical school buildings because the shops may be located in a plant somewhere else.

18. Very often occupatns of a new building do not begin to capitalize on the education opportunities that exist within such a building.

19. Before a new building is occupied, time should be spent with such groups as teachers and custodians who will occupy the building in order to orient them to building design and utilization.

20. It is often true that teachers within a building feel they "own" a room; such a feeling does not often lead to best utilization of the building.

21. Architects spend considerable time working with various groups and committees in the design of a building; they often, however, fail to orient such groups to effective use of the building after it has been completed.

22. A building planning guide must raise questions and suggest some possibile alternatives, and also point out the kinds of problems that will have to be faced if various alternatives are taken.

Implications for Facility Planning Guides

1. Planning guides must emphasize the need for program determination at the local level.

2. Planning guides should not be lists of numerical standards or requirements; they should stimulate, not freeze design.

3. Planning guides should inspire the planners to find new and better solutions rather than to prescribe answers.

4. The planning guide should not set standards which can result in almost stock plans which, in turn, can result in the same building going up all over the state, regardless of local community needs.

5. The manuals to be developed as a result of the Vocational-Technical Education Facilities Project will be suitable for use on a regional and national basis and not confined to the State of Ohio. Phase I of the Vocational-Technical Facilities Project is substantially for the planning of the production of a series of manuals which can vary in number from one or two to half a dozen or more.

6. Somewhere in the planning guide it should be stated that it is imperative that the district have a vocational director to assist in the planning.

7. There is some question on how far a planning guide should go in helping people know what good programs are in the various areas of vocational education.

8. Facility planning guides can be too general. For example, it is not enough to say there is a need for adequate storage; rather the guides should indicate what is going to be stored, how large should it be and how many there are, and like information.

9. The planning guide should direct planners to consider the right questions in planning for vocational-technical facilities.

10. Facility planning guides might raise questions to be answered, possible alternatives, and the implications of the various alternatives for program and building.

11. Detailed and prescriptive educational specifications rule out the possibility of very much creativity on the part of the architect.

12. Educational specifications are similar to what architects call "performance specifications." If the architect knows what a particular material is supposed to accomplish, he can then select the particular type of material from the various kinds which are available.

13. The instructional materials center in a vocational school may be sufficiently different than those required in a comprehensive school that a separate planning guide might be needed.

14. Some facilities are common to all schools (for example, food service facilities and administrative offices). The Vocational-Technical Facilities Project will probably not be concerned with developing manuals for such facilities.

15. In vocational-technical education programs, good libraries are important as good equipment.

16. There are probably planning guides already available for planning such areas as food service and administrative services. It is hoped that planning guides developed as a result of the Vocational-Technical Facilities Project will be ones that are not available now and are most needed.

17. Many pieces of equipment and machines can be used commonly by a number of different vocational-technical areas.

18. Perhaps there should be a manual in the planned series which is concerned about the broad issues to be faced in planning vocational facilities which will offer various alternatives within a given instructional area.

19. If a planning guide is to ask program questions which have plant implications then we must know what questions to ask. There is a great deal that we do not know about vocational curricula that we need to know to ask the proper questions.

20. Questions in a planning quide should not be so worded that they express an opinion.

21. Certain facilities such as measurement laboratories and metal testing rooms can be utilized by students in a number of vocational programs.

PRESENTATION MADE BY DR. W. F. CLAPP*
AT PRELIMINARY MEETING II - JANUARY 18, 1967

"The Need and Value of Educational Planning"

The first reaction which I have to the topic assigned me, knowing the composition of the group to which I am speaking, is that no one really needs to "sell" you on the need for educational planning. I am sure that vocational-technical specialists here have seen many horrible examples of the results of lack of educational planning in vocational facilities in which they have worked or visited. I know that the school plant specialists here have had the same experience regarding buildings in general, having been called in to try to correct past mistakes made due to poor planning, or no planning. I know that state department representatives often have had the experience of trying to convince small districts not to spend major money on a high school which, when built, will be too small to operate a complete program.

I know that architects are frequently faced with clients who ask about three questions:

1. How quickly can you get plans done for a building for 300 children like the one we just saw in town x?
2. Can you build it for half what it cost in town x?
3. Will you work for a lesser fee than usually considered normal?

School administrators frequently have to put up with drab, uninspiring buildings on improperly located, inadequate sites because of lack of educational planning in the past, and furthermore, have to do battle quite often to prevent the repetition of such mistakes.

Any one of us could cite many examples of lack of planning. So why talk about it here to this knowledgeable group?

It is my understanding that this group is called together to engage in activities which will eventually result in a publication or series of publications regarding the planning of facilities for vocational-technical education.

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*Former Associate Superintendent of Instruction, State of Michigan.

In my opinion, if there is one thing these publications should do and do well, it is to everlastingly hammer at the need for careful, comprehensive local planning of any such facility.

The temptation will be to give specific answers, even to prepare standard plans and layouts. These can come later, if indeed, they should come at all. The first and foremost job is to convince the consumers of these bulletins that there must be good planning. The next job is to try to tell them how to plan, how to organize for planning, what process to use, etc.

Educational planning has been said to be divided into two phases. First, planning for buildings, and second, the planning of a specific facility, the need for which has been determined in the first phase.

It certainly isn't necessary here to spend much time on Phase I, Determining the Need for Buildings, etc. The amount of space to be devoted to this phase in your publications is a question I am certainly not qualified to answer.

But I do hope that something can be done to try to insure that there will not be too many vocational-technical centers operated in too many districts which have neither the population nor financial resources to operate a good program for the needs of today and tomorrow. This remark is gratuitous and perhaps out of place, but my experience in the State Department of Education of Michigan with small high schools, the competitive desire to perpetuate them, to compete with neighboring communities, together with an almost total lack of understanding of the nature of a complete educational program, has led me to emphasize this.

The first consideration, then, is program, both in determination of need and in the planning of a specific facility. This must precede the planning of buildings. How can we possibly plan a building without knowing what is to be done in it? True, programs will change during the life of any building, possibly in ways we cannot now foresee, but we can try to make judgments and definitions of the program to be operated today and tomorrow and can make an effort to design for change. I was indeed glad to note that your first meeting on January 9 was concerned with program, with future trends, and that in several of the sessions to follow, the emphasis is on program.

I am ignorant as to what the state program for vocational-technical education is in Ohio. I really don't know whether you are concerned with vocational-technical education in comprehensive high schools, or whether you are considering separate vocational schools, or whether you are planning area vocational-technical centers, strategically located throughout the state for youth of high school and post-high school age. Will your centers serve for the retraining of adults? Will they be part of a community college system? Or what? The point is that answers to these questions about program must be obtained before there can be intelligent plant planning.

I said earlier that there had to be comprehensive local planning. I am sure that the kind of vocational-technical program offered in Youngstown might be different, in many respects, from one in Lima, or Euclid, or Athens, or Dayton.

Chadsey High School in Detroit has a successful program for training chefs. I think it is the only one in the state. Maybe this should be offered at a few other centers, but only a few.

Each community or area will have to decide what it needs, depending on local industrial manpower needs, changing technology, and other factors about which you are more knowledgeable than am I. Local programs should fit local situations. The determination of programs must be made locally as the first step in educational planning. I would think that your publications must emphasize this.

Let us assume now that it has been determined that a vocational-technical facility is to be built at location X, that the program to be offered has been determined, and that the ultimate enrollment has been estimated How shall the planning now proceed?

The next step is the preparation of educational specifications for that building. Educational specifications are an attempt to give to the architect all the essential information he must have to understand the "architectural" problems to be solved and the limitations under which he must work. I will try to list some of the kinds of information which should be included, not necessarily in the order of importance or in the order in which the specifications should be organized.

1. Describe the site. Location, size, shape. Special conditions. What is to be done on the site, other than to place a building? What kind of access is desired? How much parking space will be needed?

2. What age youth will be served? Both sexes? How many of each? Will adults use the building? Will it be used at night? Twelve months per year?

3. Describe, in general, the nature of the program, the educational objectives, the philosophy, if you please, in non-philosophical terms.

4. In general, and without infringing on the architect's prerogative and creativity, tell what kind of building is desired. Flexibility, etc. Describe, in more detail, the course offerings contemplated.

5. List the desired facilities, the kinds of shops and laboratories, all kinds of rooms and spaces to be provided in the building and on the site. Where appropriate, specify the capacity of certain facilities; i.e., cafeteria dining space, auditorium, etc.

6. Describe what is wanted in each space. Tell what is to be done; kinds of activities to be carried on; what equipment is to be used; what materials are to be used. How much storage space is needed for what kinds of equipment and supplies, at what location? How many students will there be in a class in this particular facility? In general, what kind of thermal, visual and sonic environment is desired? Any special considerations because of special activities, i.e., special ventiliation in automotive shop or at welding booths, special lighting of high intensity at certain locations, etc. etc. Any special safety requirements--access to the outdoors. Probably a chapter will be needed for each kind of shop.

Now some precautions:

1. Avoid pedagese. Be brief. Don't require the architect to wade through a lot of verbage to get at the meaning.

2. Where possible, organize the material in outline or skeleton form. Mention ideas rather than complete sentences or paragraphs. The architect and his staff want ideas, not rhetoric.

3. Remember that these are educational, not architectural, specifications. Tell the architect the conditions desired--let him work out a creative solution.

For example, it would be quite in order to say that noise transfer between certain spaces should be reduced as much as reasonably possible and to say why. It would not be in order to tell the architect how to do it.

It might be in order to state that because of certain activities, resilient flooring should be provided. It would not be in order to demand a particular type.

It might be in order to state that in a certain laboratory, constant temperature and humidity are required. It would not be in order to specify the heating or cooling system.

Perhaps this is enough to give the general idea about the nature of educational specifications. There is a wealth of literature in more detail on this subject.

Who should be involved in the preparation of educational specifications? One way is to hire a so-called expert, turn it over to him, and more or less forget about it. This is easy, and quick, and the task may be very well done.

The other way is the cooperative approach. In other words, those who are to use the building should play a major role in the preparation of the educational specifications. For an elementary school, I would use a committee of elementary school teachers. For a high school, a group of high school teachers. For a vocational-technical school, a group of teachers competent in the fields to be covered. I would also include representatives from the administration and representatives of other service personnel; for example, a custodian.

I realize that this approach takes some "doing" and that it has its weaknesses and dangers. Leadership, skillful in group process, is essential. Some impractical or wild ideas will be brought up. Some departments will want more than they can possibly get. Prejudice will have to be dealt with. Everyone's pet ideas cannot be adopted. But, if properly done, many new and better ideas may emerge, and an outstanding building may be the result. I believe in this approach not only because, if properly done, it can result in better buildings, but because of the opportunity for growth on the part of the participants and the development of a feeling of participation and belonging, and part ownership of the building when completed. A by-product certainly should be a better understanding of the problem of the administration in finance and budgeting.

By all means, the architect or his representatives should meet regularly with the group preparing the educational specifications. Through listening to the discussions, and by asking questions for clarification, the architect can get a much better total concept of what is needed than he can by simply reading the specifications as they are finally handed to him, no matter how well they are done. He can acquire a hard-to-define "feeling" for the building and an understanding of the purposes of the program. He can also contribute ideas from his experiences and can help to rule out impractical ideas.

Also, any such planning group should have adequate library materials on planning. Perhaps they should also be given an opportunity to visit other completed facilities in another town, not with the idea of copying but rather to see how they work, to interview the users of the building as to how certain features are working out and to find out what mistakes were made and how it can be done better next time.

It is also important that the planning committees have adequate competent consultant help throughout the planning process. Sometimes a plant specialist is employed to meet continually with the group--as a consultant--not to dominate. In addition, special consultants will be needed for special tasks. Such as, for example, the facilities needed in an electronics laboratory.

If reliance is to be placed on the cooperative approach, it must be followed all the way. The educational specifications as finally prepared should be approved by the governing board. If they cannot be approved, or must be modified for practical reasons, or if deletions or compromises must be made, the group which prepared the specifications should understand why and should have a part in working out the compromises. They should not be ignored.

When preliminary sketches are ready, the group should have a chance to study them and to make judgments as to how well the architect has succeeded in interpreting the specifications into a plan for a building.

If friendly and understanding relations have been developed with the architect's representative during the development of the educational specifications, there ought to be continuing cooperative relationships during the architectural planning. Many conferences will be needed between the architect and the group or with individual members of the group.

Out of it all can come a better building, functionally, than has ever been done before.

Now, a few sentences about the nature of the planning guides to be published.

First, they should be guides rather than manuals. I use the term manuals here in the narrow sense. They should not be lists of numerical standards or requirements. They should stimulate better design, rather than freeze design. They should inspire the planners to find new and better answers, rather than give answers.

The temptation will be, in line with your objective of being helpful to the users of your publication, to give specific answers. You know that your "customers" may be inexperienced in this field and that they will be looking for quick answers. Perhaps any plans shown should be diagramatic and illustrative. Model plans will encourage copying rather than creativity.

This does not mean that you should not include precautions and mistakes to avoid, or that you should not include illustrations. If there are regulations to be observed for safety, for avoidance of fire hazards, and for provisions for healthful conditions, they should perhaps be included, depending on whether they are readily available in other publications.

But the main emphasis should be on program as a determinant of design, upon the importance of cooperative local planning resulting in educational specifications for each project, upon doing it better, rather than standard design.

Good luck!

RESUME OF PRELIMINARY MEETING III
JANUARY 30, 1967

The third preliminary meeting was held at Stouffer's University Inn on January 30, 1967, from 10 A.M. until 3 P.M. The invited specialist and principal speaker was Dr. Joseph Nerden, Professor of Trade and Industrial Education, North Carolina University. The topic of Dr. Nerden's presentation was "Single Course vs. Curriculum Approach to Vocational-Technical Education." Upon completion of the presentation, the local consortium composed of vocational educators, school plant planners, architects, state department personnel, and vocational-technical school administrators, directed questions to Dr. Nerden, sought clarification, made pertinent observations, and drew implications for the Facilities Project. The major observations and implications are categorized and listed below.

Vocational-Technical Education

1. Vocational programs must not only meet the objectives of academic programs, but must also go further in providing applications.

2. College-trained teachers in the various disciplines often know principles but not application.

3. Because a youngster goes into a vocational program does not necessarily mean that he will not go on to college, even though many people draw this implication.

4. Vocational education and college preparatory education have the common objective of preparing people for the world of work.

5. The primary purpose of vocational-technical education is to prepare people for the world of work with a job at the end of the training. There is an inconsistency in that eighth and ninth graders are often asked what college they want to go to and what college preparatory courses they want to take, while on the other hand, students who are preparing for the world of work and are told they must delay this action until the eleventh or twelfth grade.

6. Providing a comprehensive vocational education program on one site or in one building can create problems. Students who desire training in more sophisticated vocations such as drafting and electronics feel they lose status by attending classes in the same building where students are taught to perform menial tasks. There are, however, schools where specialized training from low-level skills might

on up to very sophisticated training is available. These schools have been successful and there are many people on waiting lists to enroll.

7. Setting up a vocational program for the purpose of attracting a particular industry can cause problems. This is especially so if students are taught low-level skills which will enable them to get jobs quickly while at the same time, place them in a position of losing the same jobs just as quickly. To attract high-level and highly technical industries in an area, vocational training should be offered on a broad spectrum in order to provide enough craftsmen and technicians.

8. According to the U. S. Department of Labor, the average person in his lifetime will run through five different kinds of jobs; accordingly, vocational training should not have an extremely high degree of specificity.

9. The amount of specificity in a training program can vary with geographical area. Where there is strong union influence, however, it is difficult to train people in general skills.

10. One basic difference between industry and the vocational school is that the person working in industry knows that the continuance of his paycheck depends greatly on his performance.

11. In the final analysis we are really aiming for some kind of balance between the real job situation and what might be an isolated learning situation.

12. The kind of instructional program that permits, for example, the placement of twenty pieces of the same equipment in the shop lacks recognition of the individual and his capacity to learn and the speed at which he learns.

13. It is difficult to generalize about the various vocational programs because each one is just a little different and has to be treated just a little differently.

14. Many adults already employed return to school to learn specialties. For example, an automobile mechanic might desire to specialize in ignition, brakes, or something of that nature. This person is more interested in the technical phases of his skill which are necessary to upgrade himself than he is in working on a customer's car.

15. Students who are trained in vocational programs as auto mechanics very often find the pay received on the job is insufficient; consequently, in many areas you find automobile mechanics becoming machinists or other skilled craftsmen.

16. In most cases, adult learners have more motivation than the students on the secondary level.

Design of Vocational Facilities

1. Every kind of facility should be utilized in providing vocational-technical education to youth and adults. This would include the technical institution, the community college with a technical department, the junior college with a technical department, and service centers.

2. Small-group instruction is often a good teaching technique; however, facilities designed to house 10, 12, or 15 students in an academic classroom are rather scarce.

3. A few schools have been designed in terms of three levels of learning: large group or lecture type instruction involving 100-500 students; small group interaction involving 10 or 15 students; and action-level learning involving the single individual. Yet no vocational school has been designed for the three levels of learning.

4. Vocational shops should be made larger than in the past in order to accommodate adult programs in the evening or in the daytime. Very often the adult courses held in the evening involve larger classes than the regular day program for high school students; consequently it may be unrealistic for planners to design a building in terms of high school pupil-teacher ratios.

5. Planners often worry about getting the second shop should the need arise; it could be provided easily if the concept of a double shop involving more than one instructor at a time were accepted.

6. Welding is an example of a related vocational subject. It can be taught in connection with automotives, carpentry and the like. Vocational educators, however, sometimes object to having a welding facility in an area common to the other shops because of the traffic problems created and also the difficulty of supervision.

7. There is the possibility that vocational shop design much like that of industry may be detrimental to student's safety.

8. Vocational schools can be designed to have a little different environment than industry since the objectives of vocational education are broader than just preparing people for future employment.

9. One problem in connection with expanded evening school opportunities which has to be solved is the automobile parking problem. In some areas, adults driving to evening classes have caused parking lots to be cluttered and streets to be jammed with automobiles. Perhaps some thought should be given to underground or overhead parking facilities.

Vocational Education Legislation

1. The Vocational Education Act of 1963 indicated that vocational

education training must be based upon a broad geographical basis.

2. The Vocational Education Act of 1963 does provide for vocational equipment.

3. State general assemblies do not often allow funds for the replacement of equipment due to depreciation and obsolescence in vocational education as they do in industry.

4. Some vocational legislation such as the Manpower Act, the Economic Opportunity Act, the Elementary and Secondary Act provide for programs which have the purpose of instructing people in basic understandings, reading, writing, arithmetic, and like skills which will prepare them to begin learning a vocation.

5. There appears to be some resistance in Washington to the traditional concept of categorical aid to education.

6. Section 4, Item 4, of the Vocational Education Act of 1963, provides assistance for those persons who have academic, social, economic, and other handicaps that might prevent them from succeeding in a regular vocational education program.

7. One source of funds for vocational education is the Elementary and Secondary Education Act of 1965, Title 5, which permits state education departments to use funds to further the purposes of education.

Implications for Facility Planning

1. It has always been a problem in vocational education to retire equipment when it is no longer useful to the accomplishment of curriculum objectives.

2. Educators and industry representatives do not always agree in the planning for vocational facilities; nevertheless, both groups should be involved cooperatively in such planning. Many feel that vocational education programs should be operated in an environment very similar to industry. That is, business education facilities should look like offices, distributive education facilities should look like a store, and a data processing laboratory should be similar to one found in industry.

3. Vocational education facilities represent a considerable financial investment; therefore, they should not be allowed to stand idle for considerable periods of time. If necessary, the facilities should be available around the clock if the need is there.

4. Local vocational education officials should inform industry of available instructional programs and facilities, offer their assistance, ascertain the needs of industry, and attempt to provide programs to meet these needs.

5. In dealing with adults who have had some work experience, or still getting work experience, the likelihood is that there will be a vast need for the kinds of equipment that will give them an opportunity to extend their knowledge.

6. In planning for a new district-type of technical institute in Ohio, the services of someone who has had the experience of operating a good technical institute should be sought if a local, knowledgeable staff is not available.

7. For initial planning, it is better to secure an overall supervisor than a man who has helped to set up a particular department.

8. If the vocational or techncial district is already established, it is wise to involve the staff in planning for an anticipated new facility.

9. It is hard to conceive of a new facility coming in to being without all the people who are going to be involved in it assisting in the planning from the beginning.

PRESENTATION BY DR. JOSEPH NERDEN*
AT PRELIMINARY MEETING III - JANUARY 30, 1967

"Vocational-Technical Curriculums
and
Their Translation Into Facilities"

I. THE BASIC CHARACTERISTICS OF VOCATIONAL-TECHNICAL CURRICULUMS

(Def: Curriculum as the sum total of learning experiences--)

A. Best Described in Terms of the Following:

- For whom curriculums are organized
- By whom curriculums are taught
- Of what the curriculum consists
- In what kinds of facilities curriculums are offered

1. The Clientele to be Served

   - Capable of profiting at the level which the instruction is offered
   - Occupationally oriented
   - Attitudinally prepared students

2. Who Serves the Clientele

   - Philosophically prepared instructors
   - Oriented to the world of work
   - Knowledge of the breadth of education
   - Ability to apply concepts and principles

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*Professor of Trade and Industrial Education, North Carolina University.

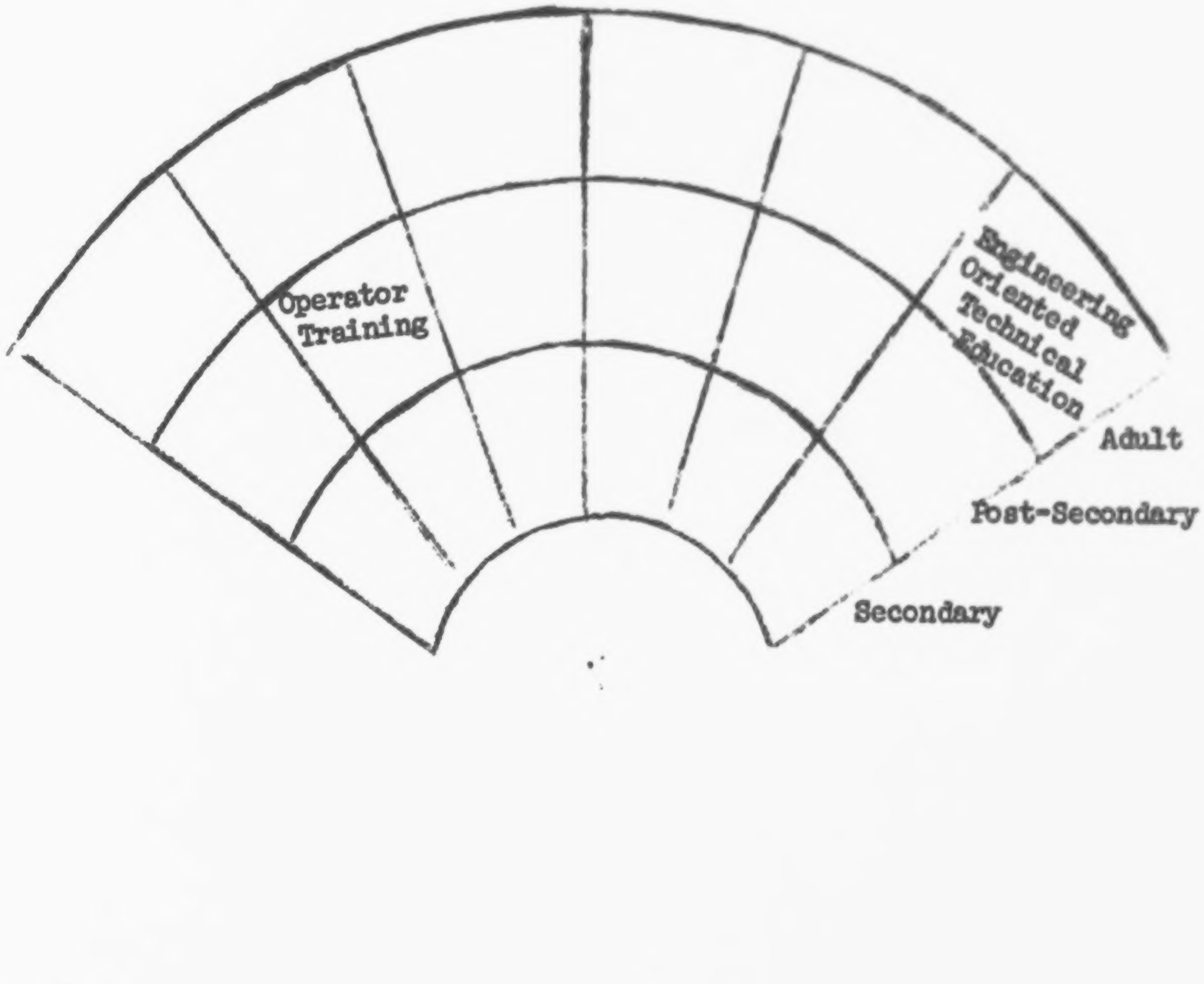
3. What it is that is Provided for the Clientele

- Content should be current
- Content should anticipate new products and processes
- Should challenge the learners at whatever level it is offered
- Must be flexible
- Must anticipate a broad cluster of occupations.

4. Facilities in Which the Clientele are to be Served

- Should resemble actual work conditions
- Should make use of modern equipment
- Should anticipate need for controlled laboratory experience prior to work on modern full size equipment, i.e. Labs adjoining shops

B. Breadth of Interests, Capabilities, and Competencies are Accommodated


Operator Training
Engineering Oriented Technical Education
Adult
Post-Secondary
Secondary

THE COMPREHENSIVE VOCATIONAL INSTITUTION

VOCATIONAL-TECHNICAL EDUCATION

Supplementary Technical Skills	For Employed Adults who wish (need to upgrade and update themselves)
High Level Technical Skills	For those whose skills are of the order required to qualify for accreditation by AMA, ADA, ECPD and such agencies
Higher Technical Skills	For those who can be educated to fill industrial technician type positions (Industrial Chemists, Mechanical Draftsmen, Architechtural Draftsmen, etc.)
Multiple Skills	For those who are capable, and can give the time to learning (grades 10-12 and grades 13 and 14) (Tradesmen, Craftsmen)
Single Skills	For the short-term learners (Production workers, etc.)
Simple Skills	For the slow learners (Baggers, Car-Greasers, etc.)

Vocational-Technical Education may meet needs of all. The same facilities __may__ be used--requires a high level of flexibility and adaptability.

II. FACTORS WHICH AFFECT THE DETERMINATION OF FACILITIES

- All education being scrutinized--Academic and Vocational
- Much national attention focused upon Vocational Education Manpower Act, Vocational Education Act, Higher Education Act
- Large sums of money are now involved

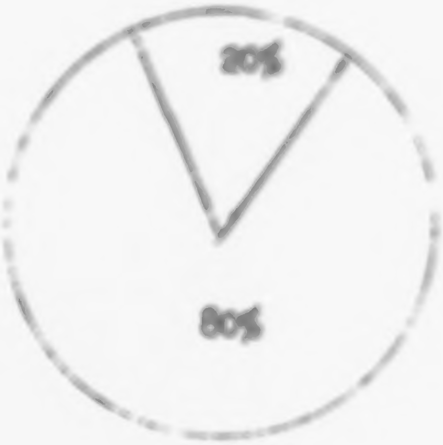
  Competition for the tax dollar
- Must accept our responsibilities to serve people

  One facet of all education

  Pattern and the content of technical education
- Design of facilities for future must anticipate more "synthesis of services"
- Available Federal/State funds should not be a control factor in a developing philosophy

III. Segments of a Philosophy of Technical Education which will determine Facilities

- Vocational Education as part of the whole structure of education



80% of all youth that start in grade 1 never complete a four-year college.

A. Direct service to industries in the region only

or

B. Educational opportunities for youth and adults

- Work force is becoming quite mobile.
- "A" may be quite provincial in its philosophy.
- Vocational Education Act. Regulations recommend "broad geographical areas" of service.
- Concern is to avert discrimination by virtue of non-availability of local employment.
- If choice "B" is taken, facilities may be quite extensive, i.e., air-conditioning in Connecticut for employment in North Carolina, tool and dye making in South Carolina for employment in New Jersey.
- Tax-payers may be concerned.

IV. PRACTICAL ASPECTS OF FACILITIES PLANNING

A. The building houses the curriculums. Design follows curriculum determination.

B. Architects must not be given free rein to design "attractive" facilities.

C. Must anticipate curriculums for the future ("lead" time). Must anticipate new processes, new products, job disappearances. Disclosures by craft advisory committees, and visitations from and to industry; i.e., Chemical Milling, tape-controlled tools, use of lasers, etc.

D. The extent to which the institution will provide its own related subject teaching, general education. (Separate area school, service center, comprehensive high school, community college.)

- Staff, Facilities, Equipment, Supplies, etc.

E. The pupil-teacher ratio in effect in the situation.

- Some large city schools. (As many as 30:1 in shop)
- Most vocational teaching tends toward 15:1 in some shops.
- Recommend, on basis of successful operation.

Most trade training shops	15:1 Max.
Most technical shops Mech. Drafting Arch. Drafting Industrial Electronics	20:1 Approx.
Related subjects Math., Sciences, Blueprint reading Layout & Design	20:1
General Education English, Social Studies, Economics, etc.	30:1

6. The level of the instructional program.

   - Secondary, post-secondary, or both

   - Provisions for large numbers of adults (Apprenticeship, supplementary as well as preparatory)

   - Equipment must be keyed to intelligence level; i.e., simple skills and simple science for slower learners; advanced science (testing materials, metallurgy) for more rapid learners.

7. Shop equipment keyed to instructional methodology.

   - All students on same project (duplication of equipment) vs. customer work method (single piece of equipment).

8. Shop equipment should be commercial and/or industrial standard--Size, variety, capacity, arrangement in operational groups.

   - Principles may be taught on smaller models, but attitudes and motivation by students are important concomitants.

   - Adults will require standard commercial and/or industrial equipment.

9. Instructional Order may affect Facilities Planning--
   The order in which subjects are offered may need to be studied.

   - Physics first may mean two physics laboratories and one chemistry lab., (depending upon enrollments).

   - 80% occupancy is about the target.

10. Instructional Methodology may affect Facilities Planning.

    A. Closed circuit television facilities

    - All students may see demonstrations; i.e., metal cutting, chemical experiments, electro-metallurgical demonstrations
    - Electronic magnification greatest advantage
    - Simple camera, two large monitors
    - Use of tilted overhead mirror, i.e., Food trades (salads, cakes, etc.)
    - May require tiered seating

    B. Peripheral layout of laboratory furniture

    - Greater flexibility than traditional layout
    - Center area for large scale experiments and demonstrations (i.e., Submarine periscope)

11. Provisions for library, gym, athletic fields and cafetorium.

    - Same average young people who want same facilities found in any school
    - Library--one place for each 10. (A.L.A. Standard)
      Book selection broad (fiction, technical, art, adventure, etc.)
      Reference shelves, and help for students to use them
    - Cafetorium--So that single use of cafeteria at noon will not be the only use.
      Include staff dining area
      Clean, well lighted, pleasant
    - Some thought to cafeteria as a laboratory for preparation of chefs and teaching of quantity food production.

12. Overall layout of area school facilities.

    - Office and quiet occupations in front of two-story building
    - Laboratories and classrooms also
    - Wings to house noisy departments
      Single story vs. multiple story structure

13. Shops and Laboratories.

    - Well-lighted and ventilated

- Equipment not permanently anchored
- Private offices for staff (?)
- Clerestory lighting
- Overhead bus ducts (contribute to flexibility)
- Storage space in all shops and laboratories
  Needed for: Projects under way
  Evening school student storage
- Lockers and sanitary facilities
- Service strip in shop areas
- Levelator and I-Beam for some one of the labs/shops
- Provisions for heat treating in metal-working labs
  Air, gas, water, electricity

14. Storage space as an important factor.
    - Most overlooked factor
    - Cost of excavating basements prohibitive
    - Storage of models, customer projects mock-ups; working models in automative labs, etc.
    - Need for storage between physics and chem. labs, and for any other laboratories
15. Flexibility of partitions.
    - Cinder block, but not as load bearing partitions
    - May require constant changes in curriculums, addition or deletion of curriculums
16. Parking space.
    - Evening, extension and adult education programs may be 3 to 4 times day enrollments
    - Each evening student in a car
17. Finally, the use of, and the encouragement to use a wide base of resource personnel.
    - Faculty and its involvement in planning
    - Supervision and Administration as a part of facilities planning curriculum activities

- Out-of-state groups
- Craft and Advisory committees
- Industrial study groups

RESUME OF PRELIMINARY MEETING IV
FEBRUARY 6, 1967

The fourth preliminary meeting was held at Stouffer's University Inn on the date above from 10:00 A.M. until 3:00 P.M. The invited specialist and principal speaker was Mr. John Lyon Reid of Dansberger and Reid, Architect from San Francisco, California. The topic of Mr. Reid's presentation was "Form and Content of Educational Specifications to Better Meet the Needs of Architects." Upon completion of the presentation, the local consortium composed of vocational educators, school plant planners, architects, state department personnel, and vocational-technical school administrators, directed questions to Mr. Reid, sought clarification, made pertinent observations, and drew implications for the Facilities Project. The major observations and implications are categorized and listed below.

Vocational-Technical Education

1. Vocational technical education is probably one of the most stimulating areas in education today for new thinking and new solutions.

2. Educators interested in the field of vocational-technical education must be sure that the fields in which courses of instruction are being offered have genuine learning potential for the student and not just simply the learning of an almost trivial manual skill.

3. Many employers are saying, "Teach my job applicants as much as you can in general education and let me teach them the special skills required by my industry." The rationale for such a statement might be the rapid technology and the surprisingly quick rate of obsolescence of machine tools and methods.

4. Many educators are saying that all high school students need some kind of vocational or technical experience as part of their general education.

5. There is room for an experimental approach to the problems of vocational-technical education.

Role of the Architect

1. Educational philosophy is important to the architect if he is to gain the insight into what lies at the base of the educational program which will be housed in the new school building which he is designing.

2. The architect must see beyond what teachers have asked for in new facilities and try to find new creative solutions.

Educational Specifications

1. Educational objectives, educational philosophy, and educational programs are the springboards for educational specifications.

2. Educational specifications act as a bill of particulars, stated by the educator to give the architect information he needs to get a building problem within his grasp.

3. Educational specifications are a vehicle for communication between the teacher and the architect.

4. Educational specifications should include a statement of the educational philosophy.

5. Educational specifications should be complete; but at the same time, they should be as brief and concise as possible.

6. In the writing of educational specifications, it would be well to look beyond the things that are already known and to look for new vistas of teaching and new slants to the learning process.

7. Educational specifications cannot state answers; they should, instead, raise important questions.

8. Educational specifications can make their broadest contribution as a stimulus for inquiry.

Facility Planning

1. The teacher is the one who knows the student very well, knows teaching methods very well, and is in a better position than anyone else, in the field of education to assist in the planning for educational facilities.

2. Planners should not freeze their thinking into accepted and recognized educational building patterns of today.

3. Planning guides should stimulate teachers, stimulate inquiry, encourage hard thinking, and provide a real impetus for teachers and others to do their own thinking and not just borrow what has been put before them.

PRESENTATION BY MR. JOHN LYON REID*
AT PRELIMINARY MEETING IV - FEBRUARY 6, 1967

"Form and Content of Educational Specifications Which Will Best Meet Needs of the Architect"

Educational specifications start with the educational program, and they serve to translate the educational program into an architectural program so that the architect may have a bill of particulars to work with.

If the educational program has been in operation for a long period of time and has been accepted as satisfactory, then the preparation of educational specifications becomes a simple listing of room spaces and the functional relationships between departments that exist in older schools. This serves as a pattern for the new school building.

This seems to happen more in the older and larger metropolitan school districts. In such districts, architects are often given room arrangement diagrams and suggested dimensions for rooms and equipment.

When these things happen, educational specifications have little value and creative thinking in programs and building design stops.

Beginning in the 1930's there was a reexamination of the educational program in our public schools and out of it came the need for new architectural thinking and new architectural forms. Educators began to think about their program and the preparation of educational specifications began to have some meaning. Architects had some new requirements to think about. As a result there were improvements in education and in the architecture of school buildings. Educational specifications have some meaning when there is fresh and creative thinking about educational problems.

Beginning about 1946 there has been a great deal of new thinking about the nature and meaning of education and about the new forms and spaces it requires. Very few people have started to do any new thinking yet in the field of vocational-technical education and these conferences that you are having now represent a new direction in the field of educational thinking.

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*Baumberger and Reid Architects, San Francisco, California

Although I am an architect and not an educator, I will venture a few observations on educational matters. During the last 20 years there has been a pre-occupation among educators with the fields of education more closely related to the professions, the sciences, engineering, the field of letters, and the job of preparing secondary school students for college.

Unfortunately, the old "shop" program as I knew it in the 1920's has not been brought up to date, even yet. I think that we finally, and at last, have stopped thinking of it as a refuge for the mentally retarded and we are now beginning to think of modifying it and regarding it as a necessary learning experience for virtually all students, even those who are college bound.

Vocational-technical education is a field where the demands on the student's thinking process may be as heavy as those in the fields of science and mathematics. As a matter of fact, the fields are all closely related. Associated with the field of vocational-technical education is a belief that somehow a manual skill is related to the learning experiences in this field. In my opinion this belief is probably correct. There are not many opportunities for introducing the concept of manual skill into the general curriculum except in the arts and crafts, the homemaking and the typing programs. These subject areas, however, smack of the specialties, rather than of the kind of fundamental learning experience needed by everyone.

If this kind of thinking becomes accepted in the field of education, then a new kind of thinking must be applied to such areas as the mathematics classroom, the science laboratories, the mechanical drawing room and perhaps even the music classrooms, all of which we used to regard as academically oriented.

There is much more resource material and much more new technical information available to the architect now which makes it possible for him to solve new problems satisfactorily. He can make it possible for the educator to introduce certain kinds of machine tool operations and certain manual activities into the classroom. . .if the educator wants it.

There is the other problem for the educator in the form of the student who may or may not go to college but who wants to earn his living by making shoes, or making metal patterns, or working in a dental laboratory, or in an electronic shop of some kind. Machine equipment and shop methods are changing so rapidly that employers now suggest that job applicants that they want should have a good general education; they, the employers, will provide the special training on the job. But many educators believe that the candidate must have some special manual skills and a knowledge of materials and their properties. The typical college bound student gets this type of learning experience in meager amounts or not at all. I suppose the right answers are yet to be found.

Little, if any, of this new thinking has been proven by classroom experience. The design of buildings must make it possible to try out new approaches to vocational-technical education on an experimental basis. This means that learning spaces must be designed so that an educational hypothesis may be verified or disproven, and in the latter case, changes must be made. Flexibility of building space is needed.

These conferences will probably produce some new thinking in the vocational-technical field. In order to carry this new educational thinking into effective and imaginative building plans, it will be useful to look at the roles of the educator, the architect and educational specifications.

Behind every new schoolhouse there are two people who bear major responsibility for giving it the form that it has; one is the teacher, the other is the architect. These two work together to serve a third person, the student. Both of them must know the student, and the more each one knows about him, the better.

It should be a simple thing for these two people to plan a school, but unfortunately it is not. The complex world we live in no longer makes simplicity possible. The parent, the voter, the taxpayer, and the citizen, all have different ideas about how young people learn, or should learn, and they, with the assistance of the federal, state, county, city and school district governmental entities, direct the work of the teacher, administrator, psychologist, health officer, coach, and counselor, as well as the work of the architect, acoustical engineer, structural engineer, electrical engineer, mechanical engineer, color consultant while scores and scores of competent, interested specialists dart in and out. In a world where our total storehouse of knowledge doubles in about every five years, the school must have some flexibility in the design to allow the school to change.

Educational specifications are an instrument of communication between teacher and architect. The knowledge that the teacher contributes to the specifications centers on the student and the activities of the learning process. The teacher knows the student and knows how he reacts in his work and how he responds to stimuli. The teacher can describe the activities of the process and the equipment requirements. The teacher need not know anything at all about blueprints. A common interest in education, and not in architecture, brings the teacher and the architect together.

While the teacher need not know anything necessarily about blueprints and need in no way apologize for it, the architect on the other hand must know something about the learning process. His knowledge of education is not that of the practicing teacher, but rather that of one who understands the learning activity so that he may design an environment for it. The teacher must sharpen and deepen the architect's understanding of the learning process. The architect, specifically, must know all of the affiliated fields of technical engineering, building codes, the art and science of acoustics, color

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and landscape. He must know how to listen to the teacher and how to place his knowledge at the teacher's disposal.

In order to design a school building, the architect needs to be told everything that is known by the teacher about the students that will attend the school, such as their racial background, homes, living standards, their education both past and future. He must be told everything that is known about the teaching methods and teaching objectives not only for the school which is being planned but also the entire school system. He must be given the detailed requirements of space and equipment that the teacher uses.

All these make up the educational specifications. They should be concise and specific. The educational specifications should be written by the teacher before this joint teacher-architect work program begins. They are a platform for a long term, face to face dialogue between teacher and architect that starts with the planning and continues for at least one year after the new schoolhouse is occupied and used.

In what form do architects desire educational specifications? Architects want educational specifications in written form, concise, to the point, and brief.

How specific should educational specifications be? Can educational specifications be too detailed? They should be as specific and as detailed as the teacher can make them; they should describe the teacher's function and requirements; these represent the statement of the design problem to the architect and from this he should have the information to solve the design. The educational specifications must be wirtten so that they state problems, not solutions.

What are the specific types of information needed for the architect? This has been answered in large part by the foregoing. The architect wants to know everything about teaching that the teacher has learned through his experience with students in the learning process. He does not want the teacher to tell him about heating and ventilating systems, floor covering or hardware, or about ceiling heights, or windows. These are the architect's business.

Should architects be involved in the preparation of educational specifications? I would say, no. Since the educational speicfications represent the demands of the teacher, they cannot be prepared by the architect. The architect may offer guidance and information regarding the form and content of the educational specifications. How can architect and educator best work together throughout the planning process? Are written critiques of plans from an educational point of view desirable or useful? No, the best way for an educator and an architect to work together is on a face to face conference basis. The more direct the contact, the better. I think that written communications reduce, rather than enhance, frequent, ready and direct exchanges and discussions which are desirable and necessary for best results.

How can the educator be assured of desirable environmental controls?

This is a good question about an important aspect of the school building. An experienced and competent architect is able to design a good environment. You have to select an architect that is capable of doing this; I do not think that checks and controls on the work of the architect can help accomplish this.

How important is balance among environmental factors? The achievement of balance is a first necessity for a satisfactory design outcome. It is only through balance that the total environment has any meaning.

Does flexibility require good educator planning, architectural planning, or both? Does flexibility cost extra? Over the past 20 years, architects have learned a great deal about how to achieve flexibility in schoolhouses. I used to think that flexibility did not cost extra; I now believe that it does cost extra. How much extra depends on the degree and kind of flexibility you wish. Architects have slowly learned so that they can now provide the ultimate in flexible building if the teacher wants it. The teacher must learn how to use it. The more sophisticated the design for flexibility, the more knowledge and know-how is required by the teacher to make full use of it. In the more primitive forms of building flexibility, the architect did most of the design work and most of the planning thinking. The advancing concept of flexibility requires an increasing contribution and participation by the teacher.

A carefully worked out set of educational specifications serves as the basis of a stimulating dialogue between the educator and architect which should generate new vistas in education and in architecture. Educational specifications should always be written so that they can stimulate and inspire all planning participants to think beyond old and worn out educational and school building concepts into new and distinguished solutions.

RESUME OF PRELIMINARY MEETING V
FEBRUARY 21, 1967

The fifth preliminary meeting was held at Stouffer's University Inn on the date above from 10 A.M. until 3 P.M. The invited specialist and principal speaker was Mr. John Standridge, Director of Vocational and Adult Education of Atlanta City Schools. The topic of Mr. Standridge's presentation was "The Relative Advantages of Core Vocational-Technical Facilities." Upon completion of the presentation, the local consortium composed of vocational educators, school plant planners, architects, state department personnel, and vocational-technical school administrators, directed questions to Mr. Standridge, sought clarification, made pertinent observations, and drew implications for the Facilities Project. The major observations and implications are categorized and listed below.

The Vocational Student

1. Student interest plays a real part in facility planning since a job demand in a community is not enough if students will not actually take a course offered to meet the demand.

2. There is a need for vocational guidance in the lower grades of school.

3. There has been a proposal submitted to the Federal government to develop programs which would lead to vocational guidance beginning at the third grade.

4. It is difficult to get students to register for courses that will lead to employment which they could get without such courses.

5. Student motivation is better when course activities are more than just practice activities; their skills and products should be actually utilized.

6. There is apparently a lower dropout problem in six-year vocational programs. This is especially true where there is good counseling and guidance at the elementary school level.

7. Students could be shown the utility and value of vocational education as early as the sixth or seventh grades; the values should be explained to them in dollar and cents terms rather than philosophical terms or education jargon.

8. Many students drop out of school because they cannot see the relationship between their academic work and their later occupational objectives.

9. Students need to experience success at whatever level they are working.

Vocational-Technical Education

1. One of the best ways to get across an instructional concept is through a live project.

2. There is a pride of craftsmanship developed by the student when he knows that he is developing a product which will be used.

3. An instructor in a vocational education program should be actually instructing rather than doing work for his students.

4. A lot of disciplines taught in the school are really vocational. Mathematics, for example, is a tool necessary to most any vocational pursuit.

5. Knowing the student behaviors desired, kinds of learning activities and other aspects of the educational program tends to answer the philosophical questions.

6. If detailed questions in specific vocational subject areas are to be asked, specialists in these various subject areas will have to be consulted.

7. Research may be needed to find out needed floor spaces and other requirements for various kinds of vocational-technical laboratories.

8. There is a need for offering vocational education programs at lower grade levels.

9. Early guidance programs involve entrance tests, parent conferences, and other activities designed to identify potential vocational students.

Core-Cluster Approach to Building Design

1. There are some architectural limitations on the designing of vocational clusters; limitations result from use of rectangular spaces, hexagonal spaces, whatever spaces are desired.

2. One of the first considerations in the cluster approach is to determine what subjects will be taught and what subjects lend themselves to cluster arrangements.

3. If a vocational instructor is operating in two teaching stations, visual supervision must be provided from one to the other.

Implications for Facility Planning Guides

1. Community philosophy plays an important part in the determination of vocational curriculums; students will not take courses in occupational fields for which the community has little value.

2. In the event a school has both a day and a night operation, the building must be designed to handle both programs.

3. Individualized instruction may not necessarily require individual student spaces.

4. Much of the information given to architects on vocational schools today is the same as that given twenty years ago: Determine the number of teaching stations, the number of classrooms, etc.

5. A planning guide must not only raise questions, it must raise important questions. If it only asks six good questions, it serves a purpose of generating other important questions.

6. The architectural planning process consists of taking a graphic or written explanation of a function or process of an activity and converting it into a third dimension.

7. Facilities should be designed primarily for students rather than teachers; very often, however, vocational teachers insist that the building be designed exclusively for their convenience.

8. A planning guide should include the kinds of things that a school director and architect, or whoever is planning a facility needs to consider.

9. If the night program differs substantially from the day program there are important building implications.

10. Equipment should be selected in terms of program objectives.

11. It is very conceivable that persons involved in facility planning do not know what the various alternatives are.

12. The family or cluster approach to the development of facility planning guides seems to show the most promise; to develop a comprehensive manual for the popular types of vocational programs would result in an underly large manual which would be hard to distribute.

13. Planning guides for the most part should tell you things you do not already know and allow for more detailed planning than manuals already available.

14. The planning guide to be developed would concentrate more on the use of facilities for teaching purposes than actual facility design.

15. It seems more important in a planning guide to find the questions to ask rather than answers to give.

PRESENTATION BY MR. JOHN F. STANDRIDGE*
AT PRELIMINARY MEETING V - FEBRUARY 21, 1967

"The Relative Advantages of Core Vocational-Technical Facilities"

Facilities for vocational-technical education have taken an elevator ride from the basement to the penthouse during the past decade. Prior to this time programs of occupational education, for the most part, were housed in vacated or inadequate and poorly designed facilities. These facilities were available and the planning of equipment and instructional arrangement was limited to fixed areas. Usually the spaces were designed for an entirely different purpose such as rifle ranges for high school ROTC programs or industrial arts labs, or even vacated classrooms with partitions removed to enlarge the space necessary for vocational programs. Vocational administrators as a result had little experience in designing large facilities for multi-programs of vocational education.

Since the passage of the National Defense Education Act of 1958 and the Vocational Education Act of 1963, which appropriated funds for construction of facilities, and because of the national, state and community interest in expanding vocational programs, a new type of vocational administrator came about - one who could foresee and plan according to what was needed instead of planning for what he could get by with in existing facilities.

This new approach to planning for quality facilities made it mandatory that planning should be done to meet the requirements of the curriculum offered in a school complex. This involves developing the curriculum first and then designing the best possible arrangement of spaces to fit the curriculum.

Curriculum is also in the process of changing in many individual school districts from single occupational type to family occupational types. For example, it is common practice today to plan for a complete graphic arts unit made up of many different crafts instead of single skill crafts. As a result of new concepts to curriculum planning and facility planning, many schools have been built utilizing this concept. The Atlanta Area Technical School is one example of core planning for vocational programs and I would like to relate to this facility occasionally during this presentation.

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*Director of Vocational and Adult Education, Atlanta City Schools

AN OVERVIEW OF THE ATLANTA AREA TECHNICAL SCHOOL

The Atlanta Area Technical School is located south of downtown Atlanta. The two buildings on the 48-acre site have a total floor space of 296,284 square feet. The main building houses all offices, auxiliary services, classrooms, laboratories, and shops with the exception of the aeronautical program which is in a separate building.

The area of the main building is 266,329 square feet. On the first floor of this building are the administrative offices, cafeteria, instructional materials center, and a number of classrooms. Administrative offices are adjacent to the entrance lobby, and nearby is the food service area seating 340 persons. This area serves not only as a dining space for students but also as an instructional area for courses in food service management. Also, near the front of the main building are the instructional materials center and a television center. Close circuit television facilities include equipment for originating programs in the television studio and portable equipment for originating programs in the classrooms. Instructional spaces are provided on the first floor for beauty culture, data processing and computer programming, business education, and needle trades.

On the second floor are the auditorium, classrooms, laboratories and shops. The autitorium seats 545 persons. Classrooms and laboratories on this floor include those for mechanical trades and technology. building trades and technology, graphic arts, electrical technology, electrical servicing, health occupations, and sciences. Diesel, body and fender and automotive departments have 24-foot wide service doors that open onto aprons which will be used for easy access to the shops. These service doors and aprons at the rear of the top floor are at ground level; the site slopes so that the front entrance of the building is also at ground level.

A separate building houses the aeronautical program. This 29,955 square-foot aviation building has large areas for power plant and airframe mechanics. Related classrooms and shops are nearby.

CAMPUS PLAN VS. COMPACT PLAN

Early thought on the school was in terms of a campus plan consisting of several buildings. It became evident, however, that a compact plan of only two buildings would provide more for the school building dollar. For example, the reduction in number of buildings resulted in reducing outside wall by 2,593 linear feet for a savings estimated at $259,300. Also, through use of the compact plan, the total roof area was reduced and usable floor space was increased. The number of parking spaces was increased, and security problems were lessened because of fewer entrances.

The compact plan is not only more economical; it is also more functional. Students and teachers may travel from classrooms to the instructional materials center and other areas with greater ease than would be possible with the campus plan. Teachers and students in different areas of learning are likely to communicate more because of their proximity.

A feature of this compact plan is the use of large interior spaces of approximately 11,000 square feet. Since walls within these spaces are not load-bearing the space may be adapted to a wide variety of arrangements.

ECONOMICS OF CORE CLUSTER PLANNING

In designing spaces of common elements much consideration is given to the ultimate use of these spaces. Students enrolled in vocational-technical subjects usually spend about 1/3 of their time in a lecture or classroom type of activity and about 2/3 of their time in a lab or shop type activity. We can say then that for one section of students enrolled in Electronics (for instance) in a six hour teaching day that they will spend two hours in a classroom and four hours in a laboratory. If we had two sections of students the lab would be used the full day, but the classroom would be used for only half of the day, that is if we consider an eight hour day for scheduling purposes. So in order to maximize the use of classroom facilities we need to have several sections of students enrolled in a particular subject or we need to make the classrooms available for more than one subject area. In other words, we would need one classroom for every two labs or shops. This, of course, is an ideal situation and would work well if everybody took exactly two hours in a classroom and four hours in a lab for every quarter in a complete one or two year program. However, curriculum patterns vary from one quarter to another, from one program to another, and from one school to another, but the general idea is to first develop the curriculum pattern and then design the spaces that are needed to fit the curriculum in order that maximum utilization may be gained from both the classroom and the laboratory or shop facility.

There are other limiting factors such as evening school enrollment in which the type of programs offered are usually of a classroom type activity. So in the evening a school would be using more classrooms than laboratories or shops as compared to the day program. There is another factor involving programs that are heavily oriented to production type activity, the students in these programs usually spend more time in the shop than do students who are concerned with experimental type activites.

It is always a mystery to me to hear a school director make a statement that he needs to expand his facilities, that he has outgrown the original design of the building and the number of students that he has enrolled has made it mandatory that he make an expansion of both classrooms and laboratories. But paradoxically as you walk through his building in the middle of the instructional day, it is not uncommon to find both classrooms and laboratories and shops that are empty. What this director needs is a good computer to do his scheduling. The price of the computer would be cheaper than making unnecessary additions to the building.

Core cluster planning has several economic advantages some of which are:

1. Non-duplication of additional labs and shops - a single lab may be used by more than one occupational group.

For instance a materials testing laboratory may be used by students enrolled in such areas as machine shop, mechanical tenhnology, civil technology, welding, building trades, etc.

A sheet metal shop may be used by students enrolled in air-conditioning and refrigeration, avaiation trades, etc.

Drafting rooms may be used by almost all trades and technologies and it is good planning to have several drafting rooms available in schools with large offerings. In the Atlanta Area Technical School there are a total of eight drafting rooms in the entire school facilities.

2. Common storage rooms may be used by more than one occupational group, especially if the type of material to be stored is related to all areas. We in the Atlanta School System at the Hoke Smith Technical School, designed a cluster of electrical and electronic labs on the floor of the school's gymnasium. The facility was erected with movable partitions so that when we moved out of the Hoke Smith Technical School into the new building we would be able to convert this space back to a gymnasium. This cluster arrangement was designed in such a way that we were able to get four laboratories, two classrooms and one central storage space that was located in the center of a rectangular arrangement. The four laboratories made up the four corners of the arrangement and there was a classroom dividing each laboratory on the long side of the rectangle.

3. Instructional materials centers may be located in such a way as to serve one or more occupational areas, depending on the size of the cluster and how many areas are involved. These instructional materials centers could house all of the visual aid equipment for that cluster. A secretary may be employed to type lesson plans, examinations and other types of teaching material that are needed by the instructors. She may also duplicate this material in many copies by having central duplicating equipment located in these instructional centers. Facilities for making transparencies and other instructional aids may also be housed in these instructional materials

centers. We understand, of course, that in order for most schools to have an instructional materials center, it must be able to justify its existence by serving as many as 5 to 10 different occupational groups. In some schools only one instructional materials center might be needed, but we feel by past experience, that no matter what size the school at least one instructional materials center should be made available for the instructors, and a secretary should be employed to do the necessary typing of lesson plans and other teaching materials that the instructors need. We have felt that we have a much better instructional program when we try to avail the services of this type to our instructors.

SUBJECT AREAS BEST ADAPTED TO CORE FACILITIES

Most of the planning of vocational-technical facilities being done today incorporates the use of the concept of core cluster planning , however, there are several factors to consider in the basic design of most of these facilities:

1. Budget - the initial building budget may be inadequate to give the proper leeway for complete planning. It may be necessary to plan an initial facility realizing that it will not incorporate all of the subject areas that are ultimately going to be housed in a space of property. It may be necessary to design a program that will take several phases of construction at different times.

2. Technological Changes - the change of occupational patterns should be considered. If it is possible to anticipate certain occupational changes in a community, such as the partial decrease of workers in a particular occupation - areas such as shoe repair, industrial power sewing, watch repair, etc., may not have the training need to justify programs.

3. Union and Apprenticeship Considerations - there may be some highly skilled trades tightly organized around the apprenticeship program that the setting up of laboratory or shop preparatory programs in these areas might not be justified if the placement of graduates would be difficult. The building trades for example may be so tightly organized that only regular apprenticeship programs are necessary to supply the labor market.

4. Student Interest - even though there is a demand for skilled craftsmen in certain occupations it must be realized that a student market exists before establishing such courses. In the Atlanta area for example we have employers crying for loom fixers. There are many opportunities for trained people to enter this occupation at a good hourly wage, but it is impossible even in the large metro area to secure an adequate number of students to enter a training program for loom fixers.

This is only one of many areas that is difficult to sell to students. Other areas that we have found difficulty in securing student interest are: Sheet metal, tailoring and alterations, upholstering and furniture re-finishing, barbering, and others.

5. Geographic Location - the people who reside in one part of the country may have different interests and background than people who live in another part of the country. In the south for example it is more difficult to sell students on skilled training than it is in the industrial north.

These are only a few factors to consider in disigning a complete building facility, there are certainly many more.

After it is definitely decided what courses are going to be offered in a training facility it is then necessary to locate these in an arrangement that would be most economical, most accessable, most easily to suppervise and to provide the best instruction possible.

In the next few pages I would like to talk about some of the subject areas best adapted to core facilities:

Electrical and Electronics:

1. Electronics Technology
2. Electrical Technology
3. Instrumentation Technology
4. Radio and Television Servicing and Repair
5. Industrial Electricity
6. Appliance Service and Repair

The following general areas and space allocations are suggested for an enrollment of 15-20 students:

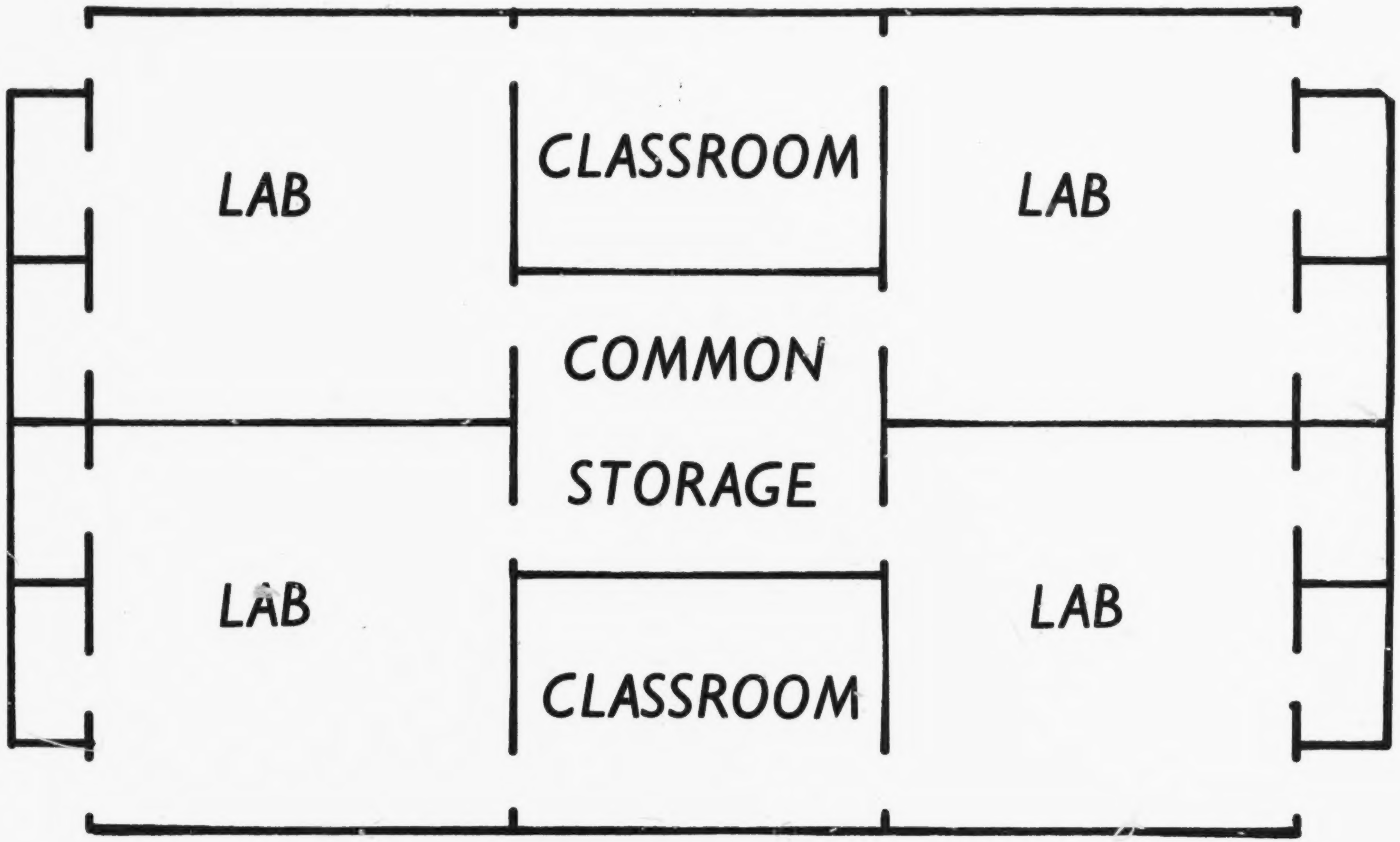
Facility	Area in Square Feet
All classrooms	650 to 750
All toolrooms	100 to 150
All storage rooms	150 to 200
Laboratories	1250 to 1600
Shops	1700 to 2200
Instructional Materials Center	650 to 750

Space Relationships

The entire spaces housing the students in electrical and electronic curricula have a close relationship. It is possible for some of the spaces to be used cooperatively by more than one specific course. It would be important, therefore, to have each of these areas located adjacent to each other.

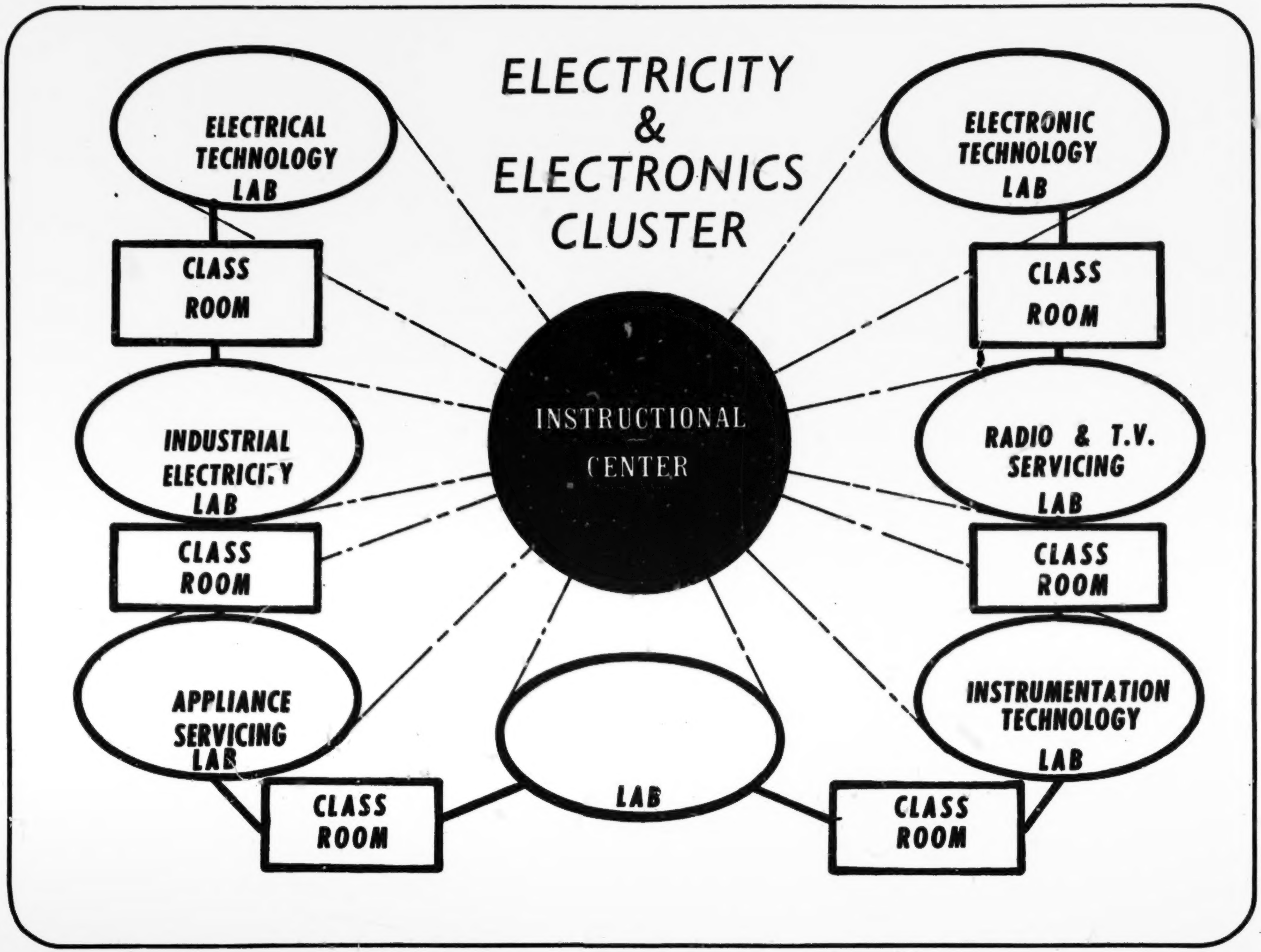
Because of the necessity of loading and unloading many appliances, the appliance service area should be located on the ground floor.

ELECTRONICS CLUSTER


CLASSROOM
LAB
LAB
COMMON
STORAGE
LAB
LAB
CLASSROOM

HOKE SMITH TECHNICAL SCHOOL ATLANTA, GEORGIA

It is suggested that the industrial electricity shops and related work areas be located on the ground floor.



ELECTRICITY & ELECTRONICS CLUSTER

INSTRUCTIONAL CENTER
ELECTRICAL TECHNOLOGY LAB
CLASS ROOM
INDUSTRIAL ELECTRICITY LAB
CLASS ROOM
APPLIANCE SERVICING LAB
CLASS ROOM
LAB
CLASS ROOM
INSTRUMENTATION TECHNOLOGY LAB
CLASS ROOM
RADIO & T.V. SERVICING LAB
CLASS ROOM
ELECTRONIC TECHNOLOGY LAB

Mechanical Crafts and Technology:

1. Mechanical Technology
2. Machine Shop
3. Drafting and Design
4. Welding Shop
5. Air Conditioning and Refrigeration
6. Sheet Metal
7. Electro-Mechanical Technology

The following space allocations are suggested for an enrollment of 15-20 students:

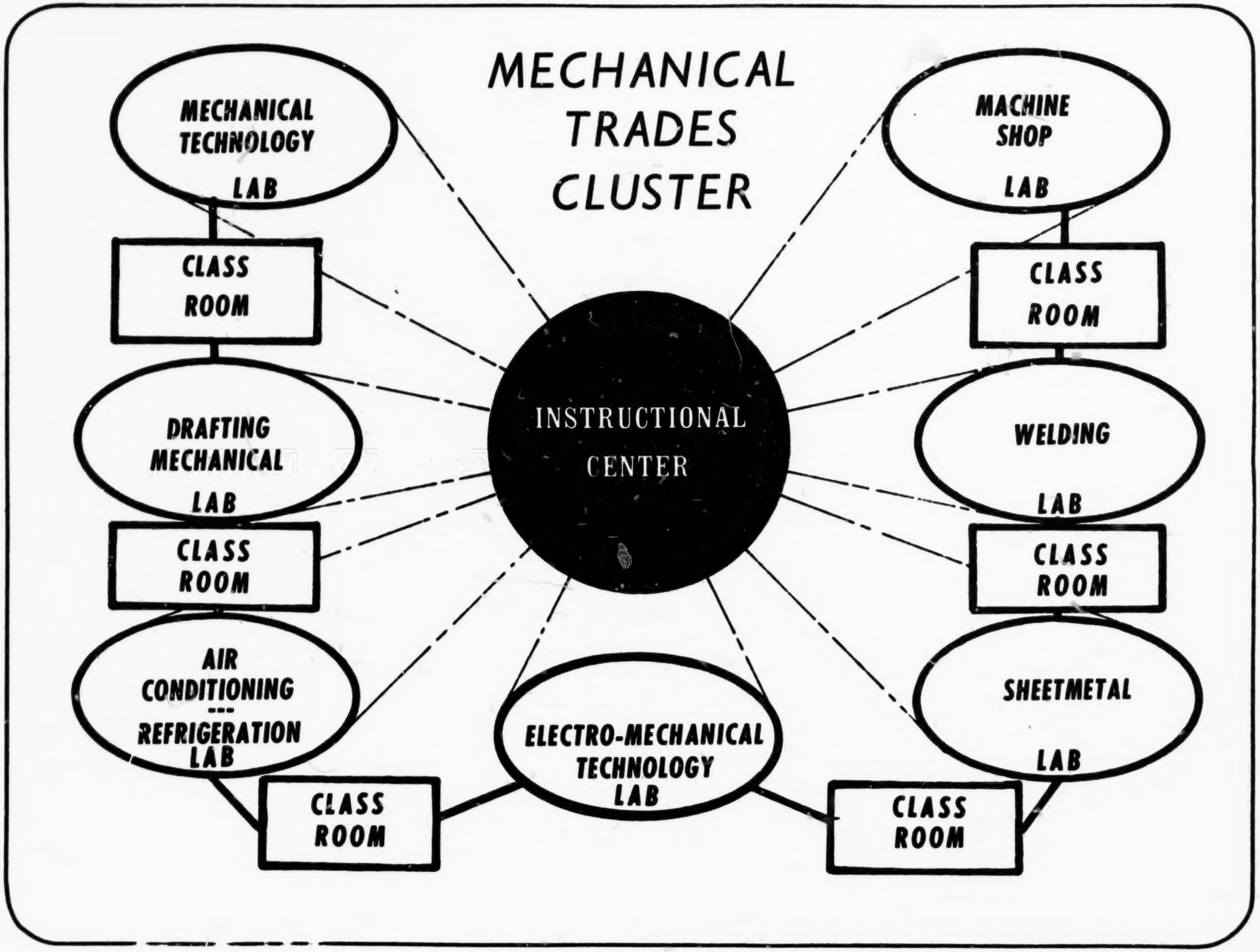
Facility	Area in Square Feet
Drafting Lab	1500 to 1750
Heat Treating	200 to 400
Grinding Room	450 to 600
Machine Shop	2200 to 2600
Machine Tool Lab	2000 to 2400
Welding Shop	1400 to 1600
Air Conditioning and Refrigeration	2000 to 2400
Sheet Metal Shop	1400 to 1800
Materials Testing	450 to 800
Polishing Room	350 to 450
Micro Lab	250 to 300
Macro Lab	150 to 200
Dark Room	100 to 150

Space Relationships

The various shops and laboratories should be arranged in such a way as to make movement from one to the other relatively easy. Classrooms within the department should be centrally located so as to be readily accessible to all other areas within the mechanical crafts and technology complex.

Some consideration should be given to locating the mechanical crafts and technology complex in close proximity to the automotive, aircraft, and building trades complexes in order that some common use may be made of such inter-related facilities as welding, machine shops, and sheet metal.

MECHANICAL TRADES CLUSTER


MECHANICAL TECHNOLOGY LAB
CLASS ROOM
DRAFTING MECHANICAL LAB
CLASS ROOM
AIR CONDITIONING --- REFRIGERATION LAB
CLASS ROOM
INSTRUCTIONAL CENTER
ELECTRO-MECHANICAL TECHNOLOGY LAB
CLASS ROOM
MACHINE SHOP LAB
CLASS ROOM
WELDING LAB
CLASS ROOM
SHEETMETAL LAB

Building Trades and Technology:

1. Building Construction Technology
2. Civil Technology
3. Architectural Drafting
4. Carpentry and Cabinet Making
5. Masonry Trades
6. Painting and Decorating
7. Plumbing and Pipe Trades

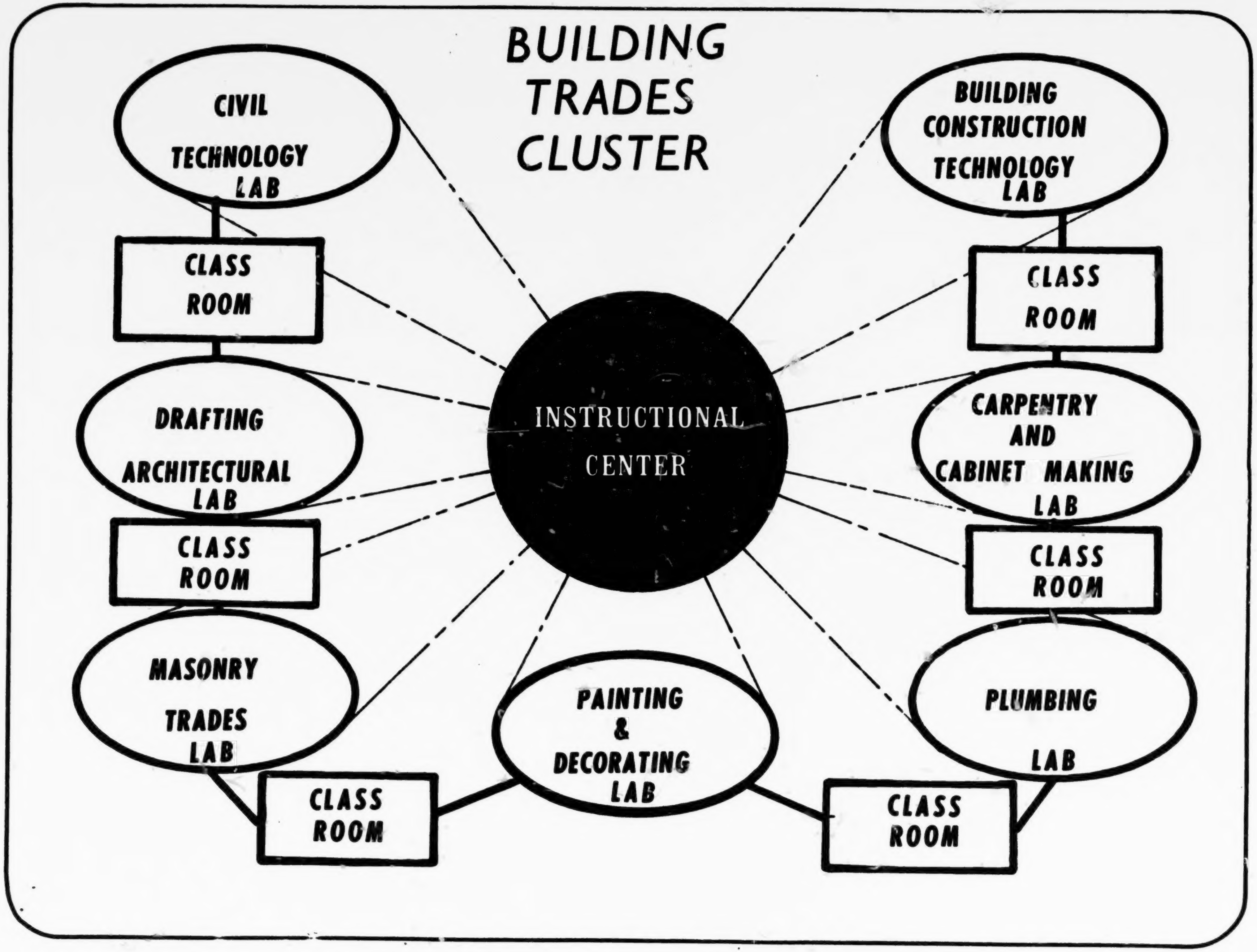
The following space allocations are suggested for an enrollment of 15-20 students:

Facility	Area in Square Feet
Building Construction Laboratory	1500 to 1800
Civil Technology Laboratory	1800 to 2200
Architectural Drafting	1500 to 1800
Carpentry and Cabinet Making	2400 to 2800
Masonry Trades	1800 to 2200
Painting and Decorating	1200 to 1600
Plumbing and Pipe Trades	1800 to 2000

Space Relationships

All trowel trades should be clustered. Common storage for such items as sand should be provided along with waste containers. The building technology, carpentry, and painting and decorating spaces should be near one another to facilitate interaction in common activities. The painting and decorating shop should be near the lathing and plastering area and building technology farthest from the noise-making shops.

Areas within each shop and common areas for storage among shops should be situated near the point of delivery and as near as possible to areas for actual shop work.


BUILDING TRADES CLUSTER
CIVIL TECHNOLOGY LAB
CLASS ROOM
DRAFTING ARCHITECTURAL LAB
CLASS ROOM
MASONRY TRADES LAB
CLASS ROOM
INSTRUCTIONAL CENTER
PAINTING & DECORATING LAB
CLASS ROOM
PLUMBING LAB
CLASS ROOM
CARPENTRY AND CABINET MAKING LAB
CLASS ROOM
BUILDING CONSTRUCTION TECHNOLOGY LAB

Health and Related Occupations:

1. Dental Technology
2. Dental Assisting
3. Practical Nursing
4. X-Ray Technology
5. Medical Assisting
6. Medical Laboratory Technology
7. Physical Therapy

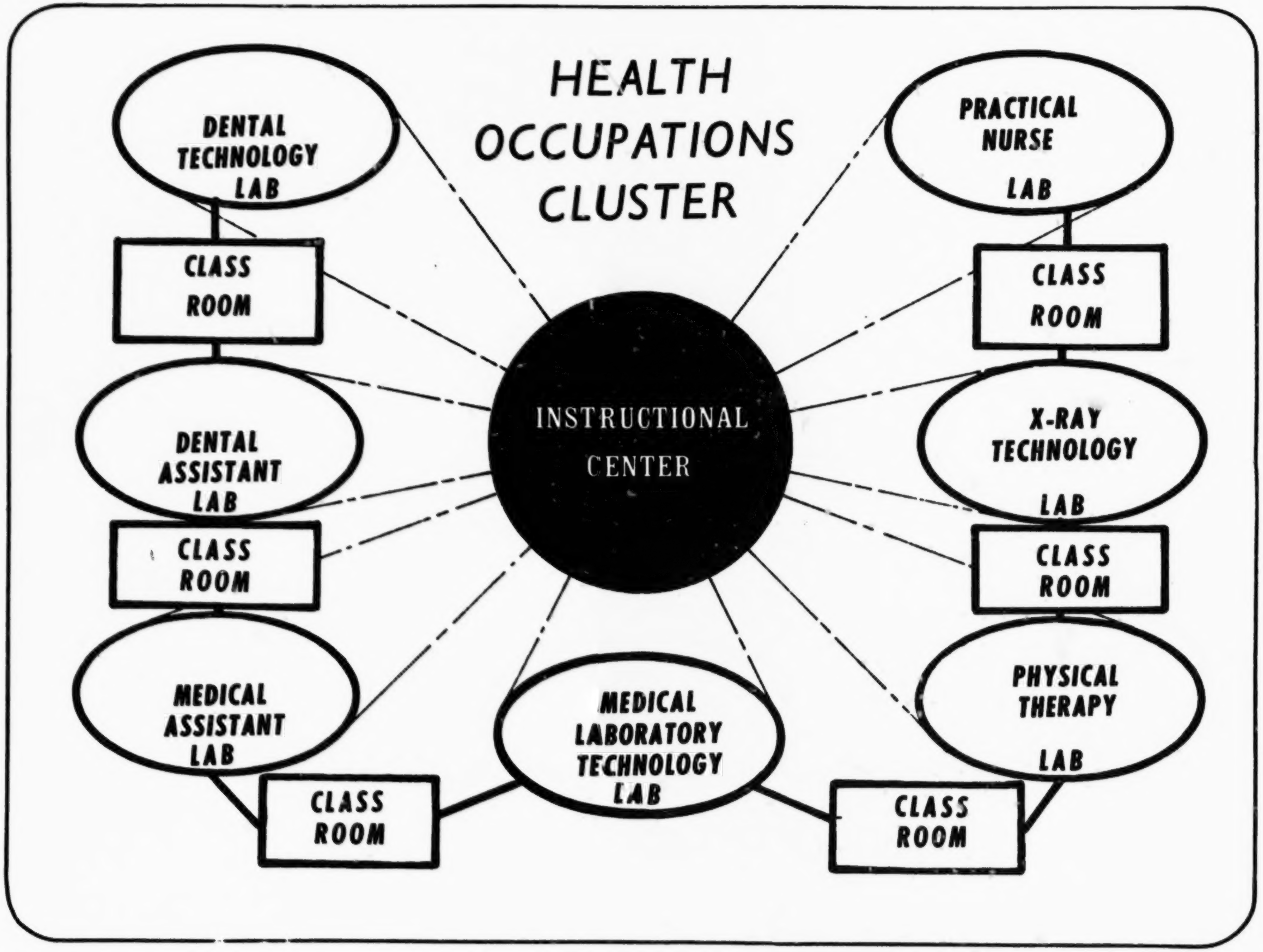
The following space allocations are suggested for an enrollment of 15-20 students:

Facility	Area in Square Feet
Dental Laboratory	1300 to 1500
Dental Assisting Laboratory	1300 to 1500
Practical Nursing Laboratory	1400 to 1600
X-Ray Technology Laboratory	1300 to 1500
Medical Assisting Laboratory	1300 to 1500
Physical Therapy Laboratory	1400 to 1800

Space Relationships

Some effort should be given to duplicating actual medical offices or sick room situations keeping in mind the number to be involved in these activities. Small groups of students will be moving from area to area and space for this movement should be provided.

Movement of equipment within an area should be considered. Mobile carts will need to be moved in some areas. Small items of equipment, such as aspirators or pumps, might be needed in other areas. Provision should be made for this equipment to be brought in and out of these areas at will.


HEALTH OCCUPATIONS CLUSTER
INSTRUCTIONAL CENTER
DENTAL TECHNOLOGY LAB
CLASS ROOM
DENTAL ASSISTANT LAB
CLASS ROOM
MEDICAL ASSISTANT LAB
CLASS ROOM
MEDICAL LABORATORY TECHNOLOGY LAB
CLASS ROOM
PHYSICAL THERAPY LAB
CLASS ROOM
X-RAY TECHNOLOGY LAB
CLASS ROOM
PRACTICAL NURSE LAB

Business and Office Occupations:

1. Typing
2. Shorthand
3. Accounting
4. Office Machines
5. Card Punch
6. Distributive Occupations.

Most of the laboratory facilities in this family of occupations need from 600 to 800 square feet for a class of 20 students. The card punch laboratory will need to be larger to accommodate the machines. It is suggested that for each machine a space of 40 square feet be allocated.

Space Relationships

Internal Traffic

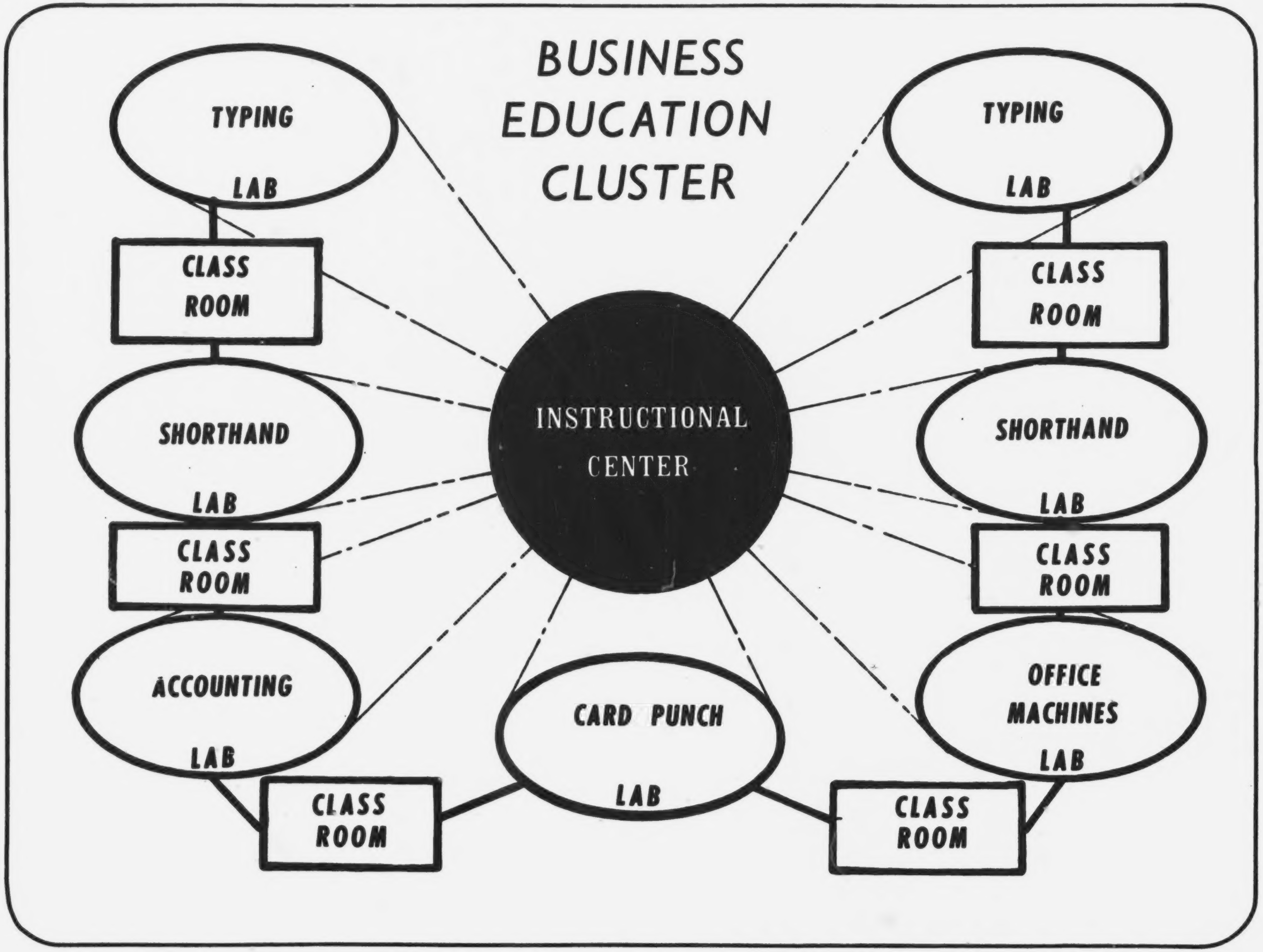
The rooms in the business education department should be in close proximity to each other. Access should be available to any room without the student having to pass through other classrooms.

Most instruction in the business education department is of the laboratory type involving demonstration and operation of equipment; therefore, the rooms within the department should be larger than the average lecture-type classroom. The increased size will also permit free access to and from every station in the room.

Orientation and Relationships

Intra-departmental relationships. The typing rooms should be adjacent to each other. The office area should be located near the center of the business education complex. The storage room should also be located as conveniently as possible to all classrooms.

Inter-departmental relationships. The business education department should be located near the instructional materials center and the general classroom area. If the department is to offer clerical service to the central office, it should be easily accessible from the administration units.



BUSINESS EDUCATION CLUSTER

INSTRUCTIONAL CENTER
TYPING LAB
CLASS ROOM
SHORTHAND LAB
CLASS ROOM
ACCOUNTING LAB
CLASS ROOM
CARD PUNCH LAB
CLASS ROOM
OFFICE MACHINES LAB
CLASS ROOM
SHORTHAND LAB
CLASS ROOM
TYPING LAB

Food Trades:

Listing of laboratories:

1. Food Preparation
2. Meat Preparation
3. Baking
4. Food Storage
5. Scullery
6. Serving Area
7. Dining Area

FOOD SERVICE CENTER

General Considerations

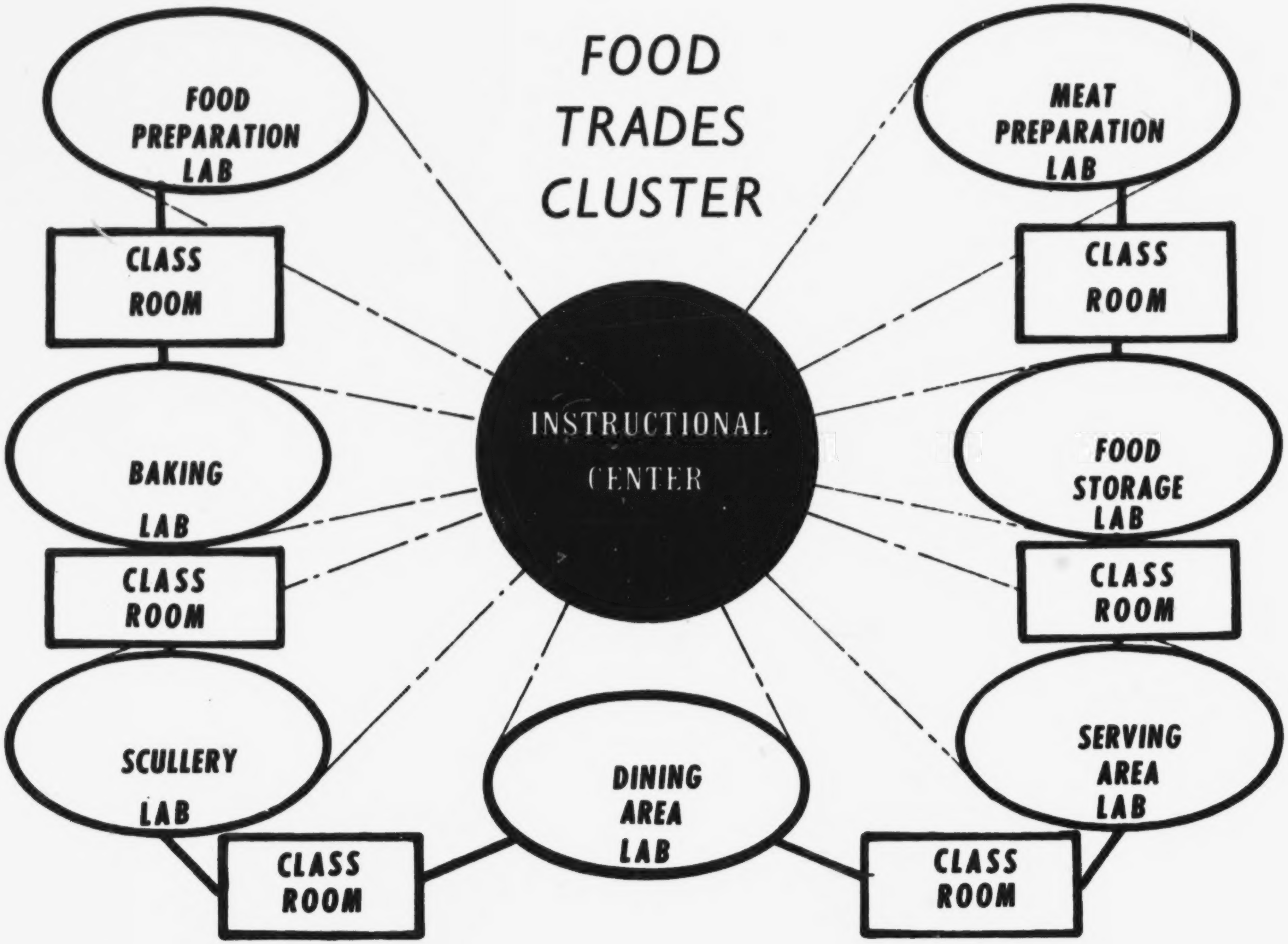
The food service center should be considered an integral part of the operation of the school. The food service center is to serve three major functions: (1) to provide a training center for classes in food preparation, cafeteria management, and restaurant-type training service; (2) to provide opportunities for adequate and nutritional meals for each student; and (3) to provide a place for students to gather socially as during coffee breaks.

In addition to these functions, the cafeteria may serve as a place to assemble students during the hours when the dining areas are not being used.

The primary focus in designing the food service center, however, should be upon the adequacy of the spaces to enhance the efficient preparation in the serving of the food. Every effort should be made to provide the best environment possible, and the aesthetic qualities of the center should not be overlooked. Spaces should be designed to serve the activities of students, faculty members, visitors, cafeteria workers, and students training in commercial foods.

Space requirements will vary from school to school. It is suggested that a professional foods layout consultant be employed to work with architects and school administrators in the design of facilities.

FOOD TRADES CLUSTER


FOOD PREPARATION LAB
CLASS ROOM
BAKING LAB
CLASS ROOM
SCULLERY LAB
CLASS ROOM
INSTRUCTIONAL CENTER
DINING AREA LAB
CLASS ROOM
MEAT PREPARATION LAB
CLASS ROOM
FOOD STORAGE LAB
CLASS ROOM
SERVING AREA LAB

Data Processing:

Data processing might be another area in which a large family of occupations might not be involved.

PHYSICAL SPECIFICATIONS

Space Requirements

The data processing area should be divided into two major units, (1) the unit-record room, and (2) the computer room. The unit-record room, in addition to punchcard equipment, should contain tables and individual chairs for approximately 15 students. This would enable the facility to accommodate students during classroom demonstrations. Adjoining the unit-record room should be a classroom of average size. This classroom should be equipped with tables and chairs, and could be used for related subjects as well as unit-record subjects. The tables in this room could also be used by students for work space during their laboratory time. The computer room will need at least two work tables. The equipment should be arranged in such a manner as to permit students to observe demonstrations. However, due to the simplicity of operation, demonstrations on the computer would not require as much space for time as that in the unit-record room. Adjoining the computer room should be individual work space for computer programmers. The general computer room is not a desirable place for a computer programmer to work. It is strongly urged that at least three areas adjacent to the computer room be allocated for computer programmers. These facilities could be utilized not only by those closely affiliated with the computer installation, but also by instructors and students from other areas of specializaton.

To accommodate the previously described activities and necessary equipment, it is recommended that the data processing center contain the following spaces:

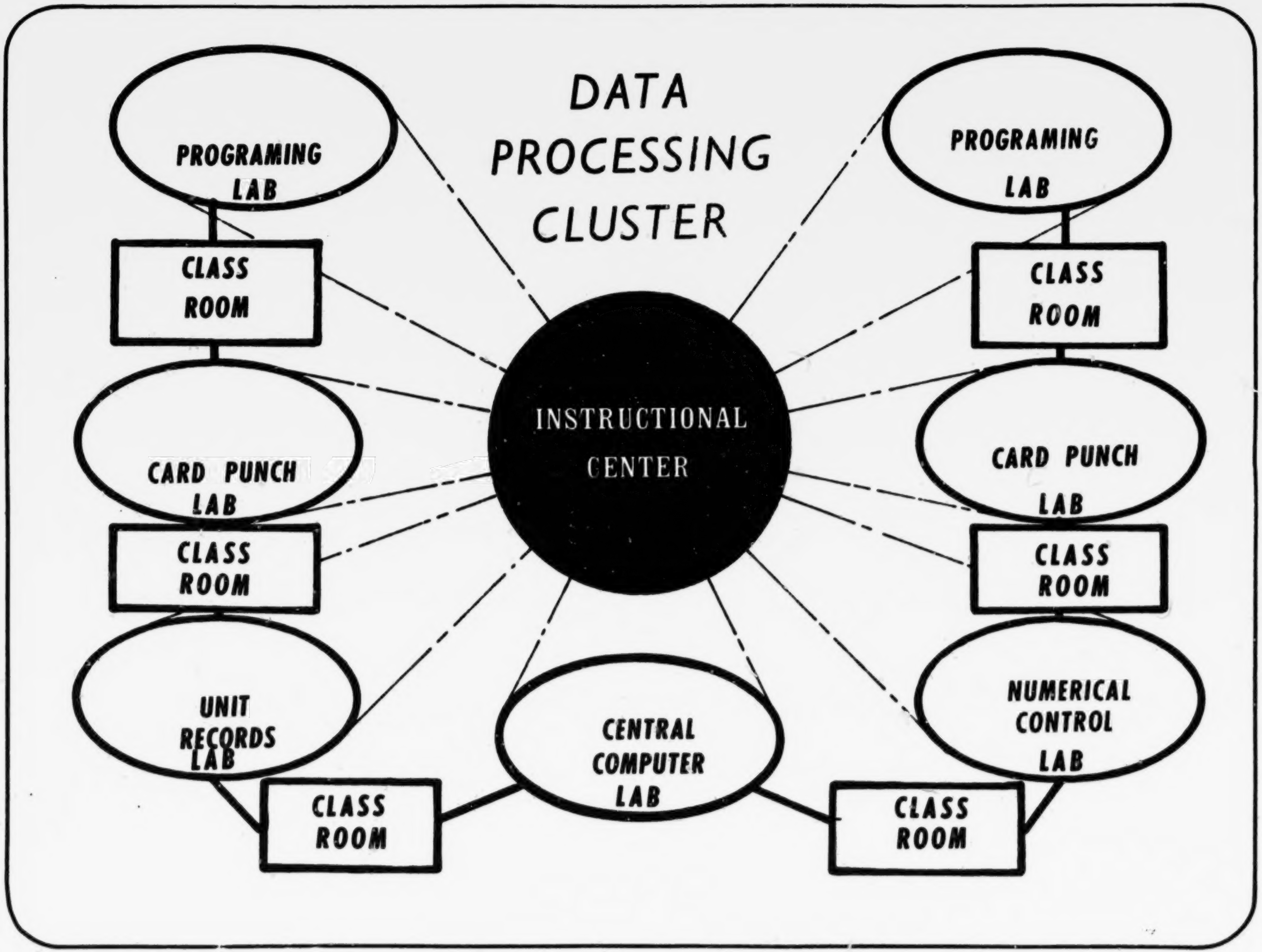
Facility		Area in Square Feet
Unit Record Room		1000
Computer Room		600
Two Storage Rooms	(300 ea.)	600
Three Programming Rooms	(200 ea.)	2600
		800 sq. ft. total

Space Relationships

The data processing center should be conveniently located to the administrative suite. The principal use of the unit-record equipment will probably be for business applications. Key-punch operator training might be conducted by the business education department, therefore, the kindredship of these two would necessitate the location of the data processing department in the same general area of the business education department.

Intra-Departmental Relationships

The unit-record room and the computer room should be adjoining. The storage rooms should be adjacent to each of these rooms. The computer programmer rooms should be adjoining the computer room with easy access to and from each room. The location of adjoining classrooms should be arranged in such a manner as to make them equally accessible to the business education laboratories. One classroom should adjoin the unit-record room with convenient entrance into the unit-record room. This would provide easy passage from a lecture room to a demonstration room. A lecture room should also be located near the computer room to allow for both lecture and demonstration without having to move a great distance from the classroom to the point of demonstration.


DATA PROCESSING CLUSTER
PROGRAMING LAB
CLASS ROOM
CARD PUNCH LAB
CLASS ROOM
UNIT RECORDS LAB
CLASS ROOM
INSTRUCTIONAL CENTER
CENTRAL COMPUTER LAB
CLASS ROOM
NUMERICAL CONTROL LAB
CLASS ROOM
CARD PUNCH LAB
CLASS ROOM
PROGRAMING LAB

Graphic Arts Cluster:

1. Commercial Art
2. Photography
3. Platemaking
4. Technical Illustrating
5. Composing
6. Offset and Letterpress
7. Bindery

Space Allocations - 20 students

The commercial art lab need not be any larger than an average size drafting room. The photography and dark room lab needs to be large enough to house the equipment and several students for demonstration purposes. The general shop area may be open and could include the composing room, pressroom, bindery, platemaking and space for advertising art and layout. This should be one of the largest areas in a school complex since it involves large pieces of equipment and adequate space for the proper flow and handling of work and material.

Special Requirements

Humidity causes paper to stretch, shrink, and sometimes difficult to handle so it is recommended that air conditioning or humidity control be installed for efficient and quality operation. The shop should be easily accessable for the movement of paper to and from the shops area.

The camera room and dark room should have adequate air conditioning and ventilation to reduce heat and exhaust the chemical fumes produced in developing.

The floor in the pressroom should be stable to reduce vibration caused by the large presses, a ground floor is highly recommended.

The light level should be 150 foot candles for the entire shop area.

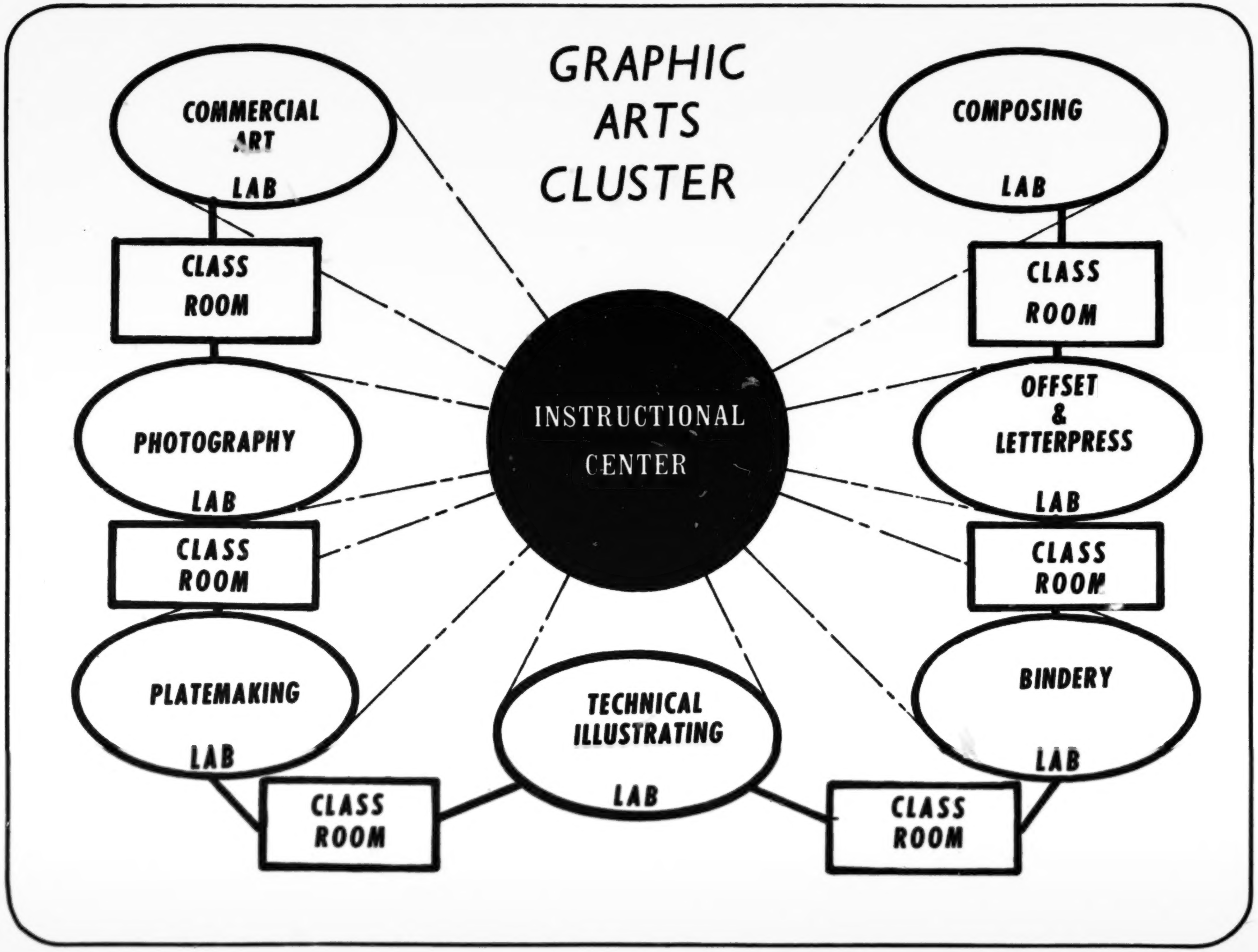
Some provision should be made to reduce the noise level in the press area.

Space Relationships

The printing shop will probably be used for the production of certain instructional materials, so it is recommended that it be located near the instructional materials center.

A customer receiving area is suggested to help control internal traffic within the shop area. This area is especially desirable if a large amount of live work is involved.

A large storage room for paper should be located near the paper cutter and pressroom.



GRAPHIC ARTS CLUSTER

COMMERCIAL ART LAB
CLASS ROOM
PHOTOGRAPHY LAB
CLASS ROOM
PLATEMAKING LAB
CLASS ROOM
INSTRUCTIONAL CENTER
TECHNICAL ILLUSTRATING LAB
CLASS ROOM
COMPOSING LAB
CLASS ROOM
OFFSET & LETTERPRESS LAB
CLASS ROOM
BINDERY LAB
CLASS ROOM

Automotive Trades Cluster:

1. Auto Engines
2. General Service
3. Transmissions
4. Small Gasoline Engines
5. Auto Chassis
6. Trim and Accessories
7. Paint and Body

Space Requirements

To provide for the activities in the automotive cluster the following spaces are necessary:

Facility	Area in Square Feet
General Service Shop	3200
Accessory Laboratory	1175
Chassis Laboratory	2600
Classroom	750
Engine Laboratory	2200
Body Repairing and Painting	3200

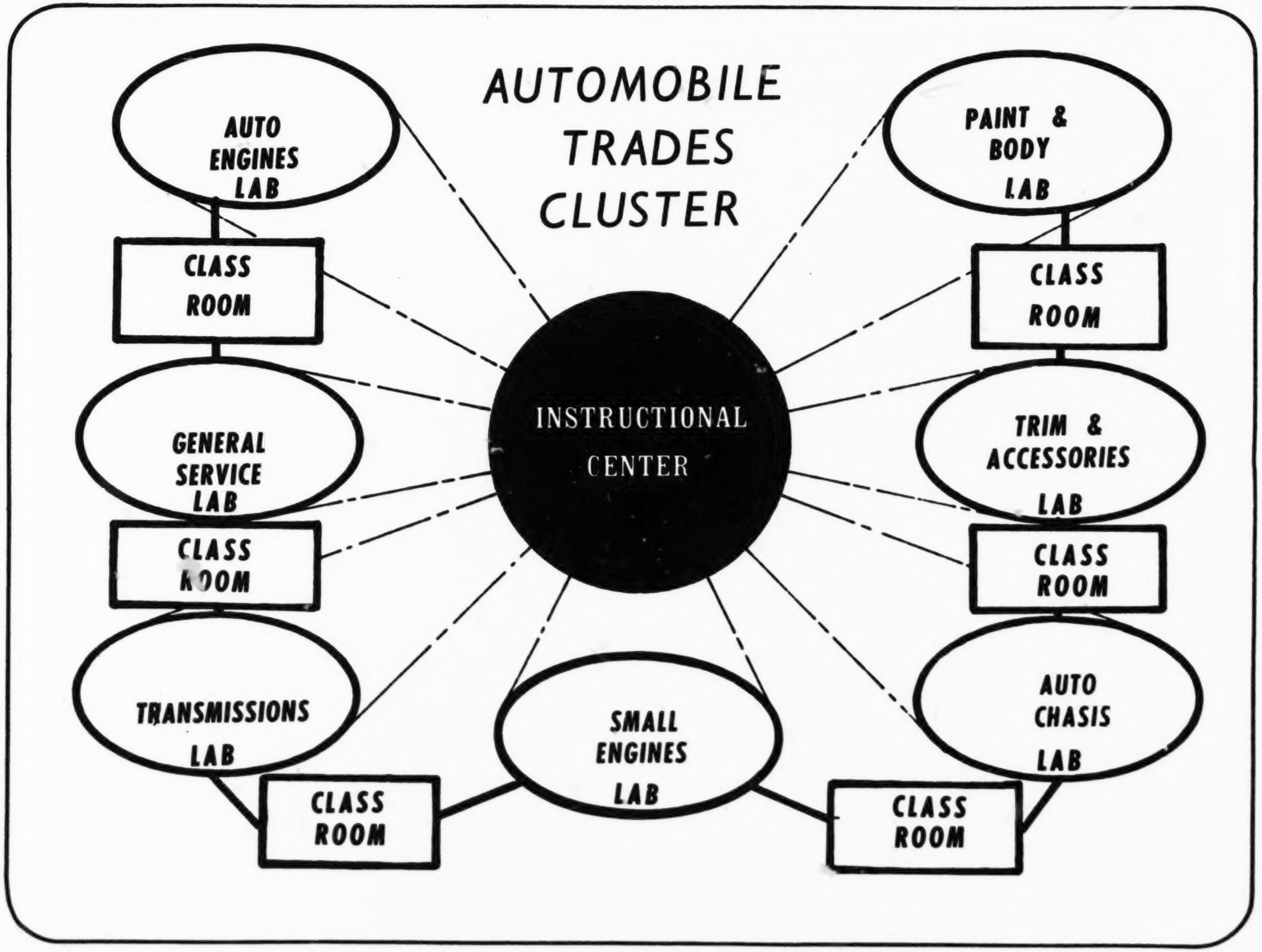
Space Relationships

Internal Traffic

Students should have access to all working facilities. The traffic pattern should allow a free flow of students from one activity to another and should allow easy access to equipment and materials.

There should be adequate space for movement of cars, engines, parts, and materials throughout the shop area. Car stalls, equipment, doors and furniture should be arranged with ample space around them for easy movement and accessibility.

AUTOMOBILE TRADES CLUSTER


AUTO ENGINES LAB
CLASS ROOM
GENERAL SERVICE LAB
CLASS ROOM
TRANSMISSIONS LAB
CLASS ROOM
SMALL ENGINES LAB
CLASS ROOM
AUTO CHASIS LAB
CLASS ROOM
TRIM & ACCESSORIES LAB
CLASS ROOM
PAINT & BODY LAB
INSTRUCTIONAL CENTER

Aviation Trades:

Space Requirements

The following spaces are recommended for the aviation-mechanics program:

Facility	Area in Square Feet
Air Frame Section	
Dope and Paint Shop	1,500
Air Frame Area	7,250
Air Frame Shop	4,350
Tool Room	480
Parts Storage Room	480
Powerplant Section	
Powerplant Area	7,250
Powerplant Shop	4,050
Tool Room	480
Parts Storage Room	480
Air Frame and Powerplant	
Classroom	768
Drafting Room	768
Office	480
Total	28,336

A large concrete apron will be needed for storage of aircraft. An engine test area and an area for storage of combustible fuels will be on one edge of the apron. A balcony above the shops, tool rooms, and parts storage rooms will be utilized for the storage of complete fuselages, engines, and other aircraft components.

Space Relationships

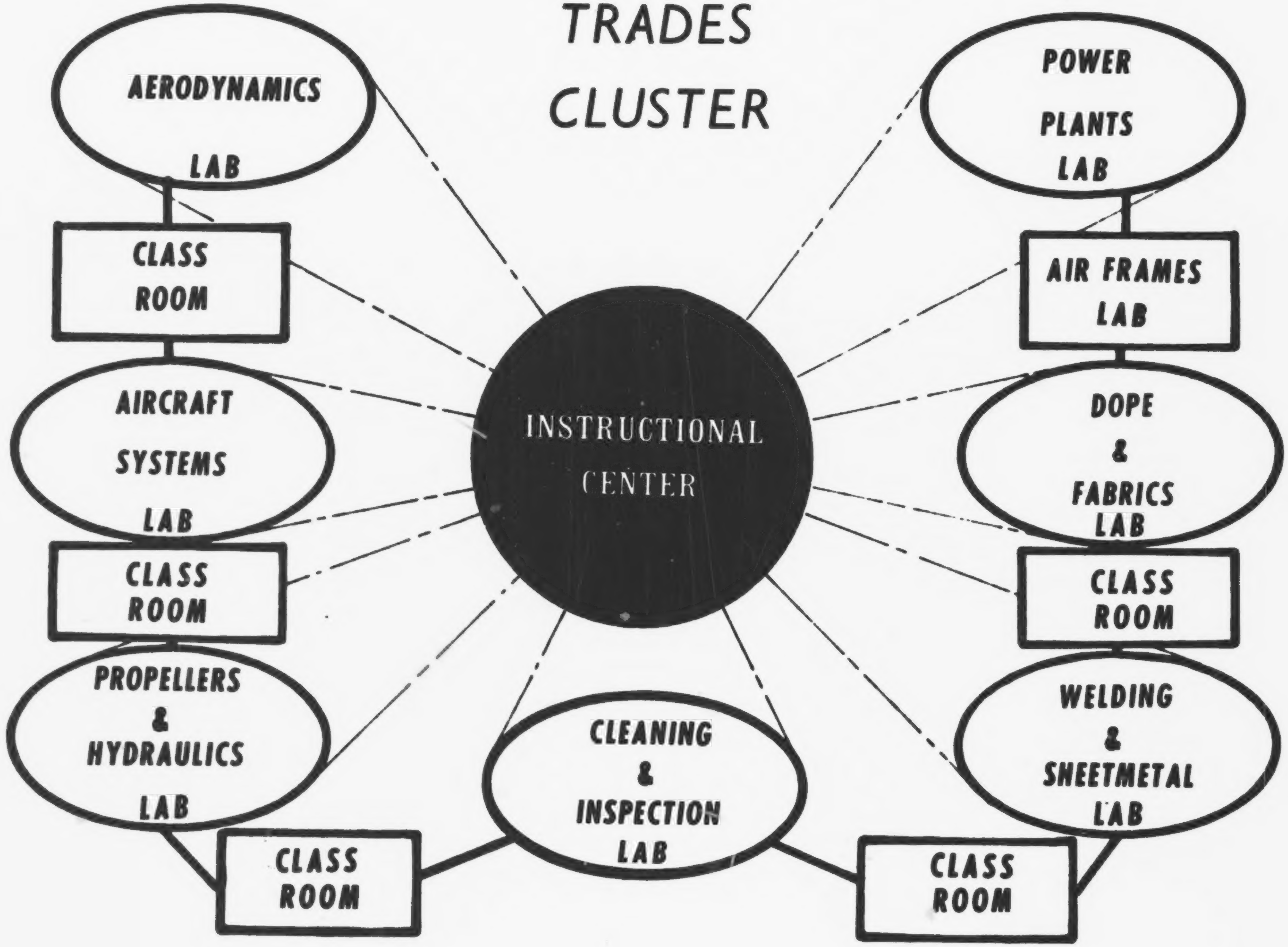
Orientation and Relationships

The air frame and powerplant areas should be adjacent in order to facilitate ease of movement between the two areas.

The tool rooms and parts rooms should be adjacent to their respective shop areas. The classroom and drafting room should be accessible from all areas within the aviation complex.

Inter-Departmental Relationships. The aircraft shops must be isolated from the general classroom area due to the noise factor. The shops should be located near the automotive and mechanical area.

AVIATION TRADES CLUSTER


AERODYNAMICS LAB
CLASS ROOM
AIRCRAFT SYSTEMS LAB
CLASS ROOM
PROPELLERS & HYDRAULICS LAB
CLASS ROOM
INSTRUCTIONAL CENTER
CLEANING & INSPECTION LAB
CLASS ROOM
POWER PLANTS LAB
AIR FRAMES LAB
DOPE & FABRICS LAB
CLASS ROOM
WELDING & SHEETMETAL LAB

RESUME OF PRELIMINARY MEETING VI
FEBRUARY 27, 1967

The sixth preliminary meeting was held at Stouffer's University Inn on the date above from 9:30 A.M. until 3 P.M. The invited specialist and principal speaker was Dr. Dwight W. Allen, Professor, Stanford University. The topic of Dr. Allen's presentation was "The Influence of New Instructional Techniques on Facility Planning." Upon completion of the presentation, the local consortium composed of vocational educators, school plant planners, architects, state department personnel, and vocational-technical school administrators, directed questions to Dr. Allen, sought clarification, made pertinent observations, and drew implications for the Facilities Project. The major observations and implications are categorized and listed below.

Vocational-Technical Education

1. Out of philosophy grow objectives of the program; out of the objectives grow content for the program.

2. If the teacher is a professional, then he needs to have a professional place to work.

3. The twelve-month school year has always been considered a problem because it is too constraining on people; however, it might not be if teachers' and students' absences were preplanned.

4. As we move toward more individualization of instruction, the diagnostic function of education will become more and more important. It may possibly take up as much as half the school day in the future.

5. There are certain educational functions which can be supervised by a person with less training than a four-year college trained teacher; it might be done, for example, by a two-year trained educational technician.

6. Although students may come and go as they please in open laboratories, they may also at the same time need a great deal of supervision.

Vocational-Technical Facilities

1. Space should be functionally designed rather than departmentally oriented.

2. If a school really has a substantial independent study program, space provided for independent study is not duplicate space; it is in lieu of classroom space.

3. The library under a traditional program is called duplicate space whereas in a flexible program the library spaces can be counted as specific instructional spaces for students.

4. Space should be continually modified and provisions should be made in the budget for its continual modification.

5. As long as there is a center corridor with a 30-foot span on either side called classrooms there is little possiblitiy of any modification of space because three rooms make a bowling alley effect.

6. The concrete block wall as a flexible unit is still the cheapest thing as a division between any two spaces, but there is a psychological barrier to removing concrete block walls because they are heavy and there is the impression that it will cost a fortune to move them.

7. Right now space is designed for a single level of student control, namely, students should always be under the thumb. Different alternatives of student control for the functional use of space needs to be designed.

8. Space must be designed for student access without disturbing instruction.

9. Accoustical requirements need to anticipate student movement during instruction.

10. Space coordination becomes more important as differentiated activities are supervised by separate personnel.

11. One suggested base line for a resource center or laboratory space is 100 students.

12. Experimental space (space designed for maximum changeability) would be a way of encouraging change by facility design.

13. An architect should continue to be identified with a building long after it has been completed.

14. It might be better to not begin a new educational program when inadequate space must be used. If a program is poorly housed, the program does not get fair test.

15. Very often when people get around to thinking about program, it is too late for the program to be reflected in educational specifications. Perhaps the motto should be, above all else to keep the load off the walls.

16. There is nothing inherently more expensive about flexible space than non-flexible school space in school buildings.

Implications for Development of Facility Planning Guides

1. The first year of the project is not a production year, except that one or two manuals will be produced to serve as pilot manuals.

2. Planning manuals can go into detail without becoming overly prescriptive.

3. Although planning manuals can get very specific the manuals should also be open-ended. The planning guide is not intended specifically and primarily to help the architect; it is to help the educator do his planning before the architect begins to come up with a design solution.

4. Basically what we are trying to develop is a guide to assist in developing a set of educational specifications.

5. Architects need to know the philosophy of a vocational program, the curriculum content of each of the vocational areas, and the specifications for equipment that will be included in each vocational area.

6. We need to develop an atmosphere and an intellect of space modification.

7. The architect should be informed to ignore the parameter of thirty-student classrooms in the central hallway; otherwise, by default, it will come out that way.

8. Architects are not always given sufficient leeway in terms of the specifying educational design.

9. We need to look more carefully at the development of criteria for evaluation of space usage; now only one criteria is used namely, what percentage of time is the space used?

10. The process of facility planning if aided by a guide with a long list of questions can go a long way toward getting people to think differently about educational specifications.

11. The most important part of any guidelines presented in a planning guide is preparing people to address themselves systematically to the widest list of concerns.

12. Another step in the planning guide would be to develop some program alternatives. For example, a program requiring 40% independent study time requires one set of configurations, another type of program with more or less independent study time would require another set of configurations.

13. The mere process of making planners accountable for some important educational issues will lead to some desirable changes.

PRESENTATION BY DR. DWIGHT W. ALLEN
AT PRELIMINARY MEETING VI - FEBRUARY 27, 1967

"The Continuous Progress School Building"

New Definitions of Flexibility

When we talk about innovations and school facilities we need to consider new definitions of flexibility, not flexibility in terms of fads. In the 40's, schools needed skylights in the roof; in the 50's, we put in moveable partitions; today no self-respecting school would be without carpeting on the floor somewhere. We still go on creating school buildings with thirty-student rooms, row upon row, and all of them use this square box design as a basic reference point. A flexible facility is defined as any structure which departs from this traditional pattern. However, the chief prerequisite is that the building must be able to return safely to a traditional program usage in case the new approaches in flexibility do not work.

What is needed now in the conceptualization of new school facilities is a completely different approach to flexibility. We have to develop definitions of functionally specific space which will provide minimal environments for instructional purposes. School rooms today paradoxically reflect excess facilities, designed to insure multipurpose use of each room. We must be more specific and define the instructional program for which the room is to be used and thereby reduce the scope of essential equipment and space requirements.

Many of our notions on the design of space are obsolete. For example, we still consider it desirable to identify a teacher with a room in the school. Until we define the role of the teacher independent of a permenent room assignment, we cannot develop flexibility. Teachers should only be identified with rooms for specific instructional functions. The teacher's base of operation should be an office, not a classroom standing empty during a preparation period. This becomes more critical as the proportion of time teachers are assigned to formal instructional groups goes down. It makes the 30-student room for a single teacher absurd. The school should be thought of in terms of new openness, encouraging both casual and formal observation of instructional episodes. A teacher using his classroom as an inhospitable castle is no longer appropriate. The professional should not feel threatened by outside observation, indeed, many of the new instructional programs demand professional collaboration. Recent patterns of instruction encourage casual student attendance at lectures for a variety of purposes, e.g., special student interests, or supplementing the same lecture from another teacher.

Present facilities assume that all students will move through the halls simultaneously. This creates traffic jam psychology in school construction and leads to the assumption that it is not necessary to design school accoustically to anticipate movement in the halls while instruction is taking place.

We need to approach definition of space functionally. Rather than designate spaces for English or mathematics, we should think of it as space for conferences, seminars, or large groups. The exception to this is certain laboratories or resource centers which are tied to specific subject areas, though even here we ought to look carefully at functions which might overcome specific subject identifications.

Today's school facility design anticipates the chronological grouping of students. We must seek alternatives that have implications for the organization of schools and the relationship between schools of different levels. Too often, flexibility of space is limited to moveable partitions which produce very expensive modes of flexibility because they are often installed indiscriminately, the cost being most inconsistent with level of use.

Four levels of time flexibility can be defined for space conversion. First, real time conversion may be needed. By that is meant that space must be converted from one configuration to another while the class is present and instruction in progress. A second level of flexibility could be called demand anticipation conversion. Here space could be set up for a requirement anticipated over a weekend, or perhaps in a few hours. The third level is semi-permanent conversion where modular or non-breaking walls move to suit program differences as they are identified perhaps every semester, or annually. Finally, remodeling should be considered within the context of the school program when specific program changes indicate more permanent conversion. School buildings should never be permanent facilities, freezing programs in their brick and mortar form, but rather facilities which can be routinely modified to allow for major directions in program conception. This change in attitude would create a major revolution in facility design and use.

In the next decades new concepts of study will emerge that have implications for facilities. They may include such alternatives as stand-up study or student conference study. We need to provide for variable monitoring levels of skill practice, for teachers to work with students to reduce mislearning through more specific remedial programs. Our concept of the school being "opened" or "closed" may become obsolete as the need to provide variable public access for school-time and off-time use increases. School facilities can be created where using a portion of the facility does not mean opening up the entire facility. Electronic flexibility alone should make us anticipate dramatic expansion in the use of technological devices ranging from computer assistance instruction and programmed learning to the more extensive use of television, films, language laboratories, audiotapes, and other audio visual devices.

Flexibility can be varied by space requirements over time. The load factors can increase or decrease for intensive periods of use, e.g., the little theater may be converted from a dramatic presentation, to the use of several television sets simultaneously, and then later to a band concert hall. Facility planning must include the possibility of spontaneous teacher and student absences and greater discontinuity in student, teacher, and school schedules. New patterns of school days and school years should be considered. Perhaps the students will come and go and teachers will come and go independent of the formal opening and closing of school. This may relieve pressure on facilities or it may create new pressures as techniques evolve to make individualization of time schedules feasible.

Facilities Designed to Encourage Change

Present school facilities tend to perpetuate tradition and discourage program and curricular change. Systematic design of facilities can encourage change. One concept, is the systematic inclusion of experimental space in each building. Space that is designed for maximum changeability. Here teachers can come to develop innovations in space configuration for pilot programs or special layouts for existing programs. If the school has some portion of its facilities set up with modular units, making it easy to change size, shape of space, electronic circuitry, and equipment, it can have a laboratory for continuous space innovation, thus encouraging the staff to examine their requirements. This should increase both efficiency and effectiveness of the use of space. If experimental space were available in a school its use would most be oversubscribed. Such a facility anticipates that modifications in routine instructional areas would be made to accommodate favorable results of such experimentation. Design can encourage change by creating alternatives within a single building to provide a perspective on use of space. Teachers in general have narrow notions of the use of school space. To them, instructional areas are stereotyped and they are not looking for alternative possibilities. We need to encourage a period of empirical development in education wherein teachers are exposed to alternatives. After this, or at best concommitantly, variation in space configuration can be subjected to more systematic examination and hopefully specific recommendations can emerge for future construction.

A continuing space consultant ought to be a regular member of the staff of any growing district. We need to develop the expectation of continuous updating and redesigning of space on a temporary, semi-permanent, and permanent basis. The Stanford School Planning

Laboratory has developed an imaginative approach where sufficient school conacts are combined to attract major development efforts from architectural and engineering firms for specific school applications. Funding authorities need to be encouraged to develop differential aid formulas for experimental structures to enable school districts to experiment with innovation and school design. As a rule, those school districts who are most innovative are usually identified with the highest quality of program and the most substantial level of community support. The public is more ready to accept innovation than we give them credit for.

We need to develop criteria for the evaluation of space use. We must identify where savings can be effected and determine where the instructional program is hampered by inadequate space availability. We need to work toward the establishment of priorities and compromise in space development and redevelopment. It may be that it would be better to delay implementation of a program entirely rather than force it into inadequate space. As long as we are willing to compromise and "make do" we are missing the opportunity to systematically upgrade the school program as these new needs are identified.

Specialized Spaces, Some Examples

Specialized space is integral to school building design. Many misuses of space can be cited. Teacher offices are long overdue. If we expect teachers to act as professionals, to engage in the individualization of instruction, and to confer with students, space must be provided. The concept of a teacher occupying an otherwise empty classroom during her preparation period is unrealistic. We need all the spaces we have for the instructional program. The teacher needs a private office to prepare materials which will be presented in a specialized facility designed specifically to make that presentation most effective.

A second special space is the resource center. This is program oriented. It is much larger than a typical classroom. It provides alternatives for staffing with both professional and support personnel. It gives space for independent study where students pick up and return papers, where student records are kept, where materials for instruction are available for student use. Another space to consider is the materials production center for graphic materials, programmed learning materials, specific modular instructional units and other teacher aids. These centers should be managed by personnel who are professional or semi-professional, knowledgeable in subject matter but technically oriented to graphic production, videotape production, production of audio-film series and other special production needs.

Seminar rooms become more important as we differentiate instruction. They create an informality which encourages group interaction. They lessen the probability of teacher domination. Some seminars will be student-led, others will be teacher-led. Seminar rooms might even be clustered so as to provide various levels of control and supervision.

Independent study carrels can be located in the library, resource centers, laboratories and classrooms, and even the social center. We think of these carrels as being general purpose, multi-sensory work environments where students call on electronic aids like genies. Actually, independent study should be as specifically designed as other instructional spaces. It is logical and efficient that not all carrels be specialized with video and audio feedback potentials. Carrels need many devices for the individualization of instruction, but not all devices simultaneously. Each carrel can be highly specialized as to function.

Typical of the school of the future is the social center. Hopefully it will become a student and faculty social center where both can relax and take a break in the school day. It should be pleasant in atmosphere and have asthetic qualities. These facilities do not have to be expensive, a slightly modified concept of the cafeteria can serve as a social center throughout the school day. We need to have personal student work centers where students can initiate a project, work on it, leave it, return to it later on, particularly where complicated equipment setups are required.

Planning rooms for instructional personnel are necessary if more joint planning is to be done by the differentiated staff. The audio visual center will grow rapidly and provision must be made for film and video viewing, both for groups and individuals. Space ought to be provided for intellectual extra-curricular activities as it is now provided for athletic extra-curricular activities, the school's German Club, and Linguistics Society, the Magicians, and Logicians. All of these must be encouraged to participate in an intellectual development that goes far beyond the routine of the school program. One way a school legitimizes these functions is by providing well-equipped space for their activities. Conference rooms to be used by both students and teachers become important as we consider experimentation.

The school needs to be freed from the sterile institutional form it has today to make it an exciting place, a more dynamic and pleasant place, a place that is designed to create pride and pleasure.

The Impact of the Differentiated Teaching Staff on School Design

The need for all the space alternatives mentioned in this paper increases with multiple staff use. We will be evolving new concepts of class size, instructional stations, and staff duties. Along with this will come new requirements for student supervision and these will demand different design for spaces. In some instances more privacy is needed, in others, more openness is needed for cooperation. Staff offices and planning spaces must be provided to encourage staff cooperation, cluster staff spaces will encourage staff working closely together. As teacher functions are differentiated, more specific space requirements for instruction are created. Much of what is now administrative space in the school will become differential instructional space such as conference rooms along with staff offices. Coordination of space will become more important as differentiated activities are supervised by multiple personnel. Functional space will tend to be grouped at the core and subject-oriented space at the periphery. A differentiated staff will further the development of specialized instructional spaces since the teacher will not be required to supervise all activities.

The Impact of Individual Study on School Design

We think now of independent study space as supplementary to classroom space. Indeed, in more advanced programs a substantial proportion of classroom space is replaced by individual study space. As mentioned before, with modular instruction, accoustical requirements need to anticipate student movement during instruction. Independent study will increase the requirements for differentiated space. Space will become more program specific and hence will require regular modification. This must be reflected in budget and in planning. Space will need to be designed for student access without disturbing regular classes if students are encouraged to come and go as individuals. Technological aids will require special configurations, availability of electrical outlets and other special elements. Different alternatives of student control are needed for different activities and because all students are not equally able to assume responsibility for independent study. Diagnostic facilities must be integrated into the instructional program perhaps in resource centers so as to accommodate both student and teacher-initiated diagnosis. As diagnostic procedures are developed more fully they will become more continuous and have greater impact on the shape of an individual student program, and on the program of the school as a whole. There will follow even more varied requirements for student-teacher and student-student interaction--and for facilities to house them.

Summary

We have discussed several major points. First, we must design facilities which are not only susceptable to modification but encourage it. We must establish building programs which encourage change in the use of facilities as well as to accommodate the original program conception. Secondly, much more specialized space will be needed. This space can become oppressive unless it has the flexibility of a continuous mechanism for modification. Thirdly, school space must be designed more dynamically to create an asthetic, vigorous environment for intellectual growth and personal interaction. Fourth, we must not be afraid to make mistakes in facilities when faced with new educational programs. Unless we are imaginative and creative in our design of facilities, they will become a positive deterrent to program developments. We lessen this risk as we become more oriented to the notion of continuous modification of facilities as a legitimate adjunct to program planning and budget allocation.

All the recommendations are an admixture of general trends and specific recommendations which reflect a very specific educational philosophy. Educational innovation must provide a comprehensive rationale within which facility innovation can and will take place at the same time properly designed facilities can both anticipate and shape innovation. Unless we believe this, we will go on letting the facility constrain the educational program by its very structure. What is really needed is the recognition that the facility can be changed as easily as the program, perhaps even easier.

PART III

PART III: INTERACTION SEMINAR

On March 15 and 16, 1967, an interaction seminar involving the vocational-technical facilities project staff, the local consortium, and specialists from the fields of school plant planning, vocational education, and architecture was held at Stouffer's University Inn, Columbus, Ohio. A list of the participants in the seminar is included in the appendix of this report.

The following procedures were followed for the two-day meeting:

Wednesday Afternoon, March 15

Participants were welcomed by H. Paul Snyder, Assistant to the Director of The Center for Vocational and Technical Education and were acquainted with the objectives of and the procedures to be followed in the seminar by M. J. Conrad, Associate Director of the Vocational-Technical Facilities Project.

The seminar participants were divided into three small groups for the purpose of discussing and evaluating tentative criteria to be followed in the development of a model vocational-technical facility planning guide. These criteria were proposed by the project staff as an outgrowth of the discussions during the six preliminary meetings. The three small groups of approximately twelve persons each were composed heterogenously of school plant planners, architects, vocational educators, state department personnel, vocational school districts officials, and United States Office of Education personnel (See Appendix). The major criteria reviewed and evaluated by the small groups were:

A. A Facility Planning Guide Should Deal with the Process of Educational Planning in Addition to its Primary Purpose of Translating Program Elements into Educational Specifications.

B. A Facility Planning Guide Should be Educationally Adequate.

C. A Facility Planning Guide Should be a Stimulus to Creative Facility Planning.

D. A Facility Planning Guide Should Anticipate Cooperative Personnel Planning Practices.

E. A Facility Planning Guide Should Encourage Complete Educational Planning.

F. A Facility Planning Guide Should Lead to Clear and Precise Educational Specifications.

G. A Facility Planning Guide Should Recognize Change as the Only Constant in the Educational Scene.

After a discussion of these criteria in small-group sessions, the entire group reconvened to hear reports from the small-group chairmen and to discuss the criteria further. The afternoon meeting concluded with the seminar participants completing a checklist of tentative criteria for evaluation of a vocational-technical education facility planning guide. On the checklist, sub-criteria were listed for evaluation under each major criterion listed above. The checklist is found in the appendix of this report.

Wednesday Evening, March 15

At the evening session on March 15, the tabulated results of the criteria checklist were presented to the group. Particular emphasis was given to criteria on which participants indicated widest areas of disagreement.

Below is a rank-order listing of criteria for a vocational-technical education facility planning guide as rated by the seminar participants. The criteria are listed from high to low participant agreement.

1. A facility planning guide should clearly indicate what it purports to do.

2. A planning guide should encourage provisions for future program changes and building expansions.

3. A planning guide should help planners develop educational specifications which will result in well utilized spaces.

4. A planning guide should ask the necessary questions rather than supply pat answers to those questions.

5.* A facility planning guide should contain a check list of things to be done throughout the educational planning process so that the specific use of the guide can be put into its proper context.

5.* A facility planning guide should contain a comprehensive definition of educational specifications and clarify the difference between the planning guide and the resulting educational specifications.

5. See next page

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*The extent of participant agreement was calculated numerically. Some criteria had identical net point scores.

Rank Order of Tentative Criteria for the Evaluation of a Vocational-Technical Education Facility Planning Guide as Determined by Participants in the Vocational-Technical Facilities Seminar

	Criteria	Net Score
1.	A facility planning guide should clearly indicate what it purports to do.	50
2.	A planning guide should encourage provisions for future program changes and building expansions.	43
3.	A planning guide should help planners develop educational specifications which will result in well utilized spaces.	41
4.	A planning guide should ask the necessary questions rather than supply pat answers to those questions.	39
5.	A facility planning guide should contain a check list of things to be done throughout the educational planning process so that the specific use of the guide can be put into its proper context.	38
5.	A facility planning guide should contain a comprehensive definition of educational specifications and clarify the difference between the planning guide and the resulting educational specifications.	38
5.	A planning guide should be a source of ideas which will motivate educational planners to creative thinking.	38
5.	A planning guide should stimulate teachers and other educational planners to do their own thinking.	38
6.	A planning guide should encourage planners to think beyond accepted or recognized educational patterns.	37
7.	A facility planning guide should explain how the guide should be optimally used.	36
7.	A planning guide should not be so general that it has no value to the educational planner in communicating with the architect.	36

	Criteria	Net Score
7.	A planning guide should allow for flexibility in time scheduling as well as in kinds of educational programs.	36
8.	A facility planning guide should explain the process of how one moves from the planning guide to educational specifications.	35
8.	A planning guide should encourage creativity and innovations in the instructional program to be housed in the planned facility.	35
8.	A planning guide should help produce educational specifications which encourage creative architectural planning.	35
8.	A planning guide should treat outdoor instructional activities and services as integral parts of program planning.	35
9.	A planning guide should reflect the fact that a teacher is a professional and can be helpful in the planning of educational facilities.	84
10.	A planning guide should encourage cooperative approaches with business and industry in the planning of vocational-technical education facilities.	33
11.	A facility planning guide should not contain suggested floor plans.	32
11.	A planning guide should encourage new school districts to hire personnel to assist in the planning of vocational programs and physical facilities.	32
12.	A planning guide should not be a list of numerical standards or requirements.	31
12.	A planning guide should elicit points of view of variety of knowledgeable people, both lay and professional.	31
13.	A planning guide should assist the educational planner in communicating with the architect concerning instructional techniques and course objectives.	30

Criteria	Net Score
13. A planning guide should assist the educational planner in making suggestions about the spatial intra- and inter-relationships of specific areas.	30
14. A planning guide should help produce educational specifications which tell the architect the spatial and environmental conditions desired rather than how to provide them.	29
14. A planning guide should assist the educational planner in stressing to the architect those conditions which are hazardous to student safety.	29
14. A planning guide should include definitions of critical terms such as flexibility and core clusters.	29
15. A planning guide should encourage new approaches to vocational-technical education on an experimental basis.	28
16. A planning guide should be so constructed that it does not tend to produce common answers to planning questions and result in similar facilities.	27
17. A planning guide should anticipate the possibility of cooperative programs between industry and vocational-technical schools.	26
17. A planning guide should allow for flexibility in time scheduling as well as in kinds of educational programs.	26
18. A planning guide should encourage sharing among the various vocational subjects or clusters of vocational subjects.	25
19. A planning guide should confront the educational planner with the broad issues and approaches to vocational education before considering facility questions.	22
19. A planning guide should emphasize the need for educational program determination at the local level.	22

	Criteria	Net Score
19.	A planning guide should be organized in outline form with easy checking scales to promote efficient use of planning time.	22
19.	A planning guide should reflect the fact that the vocational school environment should stimulate the future work environment.	22
20.	A vocational planning guide should include all instructional and service areas which because of their location in a vocational-technical school would be totally different from such facilities in other schools.	21
21.	A planning guide should be a form which minimizes recording time and permits maximal "think" time.	20
22.	A planning guide should take into account that students of various mental abilities will be working in the same facilities.	12
23.	A planning guide should encourage balance between the various curricular areas.	11
24.	A planning guide should have "do's" and "don'ts" to prevent it from being too generalized.	10
24.	A planning guide should treat electrical and mechanical facilities only when such facilities have a bearing on the instructional program.	10
24.	A planning guide should not only ask questions, but should provide some direction by offering all known possible alternative answers.	10
25.	A planning guide should not be limited to vocational-technical facilities but should include all instructional and service facilities.	9
26.	In a planning guide, philosophy and objectives should be replaced by goals stated in terms of observable behaviors.	1

Criteria	Net Score
27. A planning guide should reflect the fact that vocational-technical education has basic goals similar to those of general education.	-1
28. Different planning guides are needed for high school and post-high school facilities.	-3
29. A planning guide should not deal with the philosophy and objectives of the school.	-9
30. A vocational planning guide need not consider facilities which are common to all schools, such as food service facilities and administrative offices, since adequate guides already exist for these areas.	-41

PART IV

PART IV: SUMMARY

Millions of dollars will be spent on the construction of vocational-technical facilities in the years ahead. The unprecedented expenditure for vocational-technical facilities necessitates careful planning. To assist in the planning of and for vocational-technical facilities, a planning guide designed specifically to assist in the planning for vocational facilities would be most helpful.

The purpose of the facilities project is to develop such a planning guide. The project staff has utilized the services of many knowledgeable people in the early development of the facility planning guide. A local consortium composed of vocational educators, school plant planners, architects, vocational school district officials, and state department personnel was organized for the purpose of developing criteria to be used in the development of planning guides. The local consortium and staff met with six experts in various areas pertinent to the project over a two month period. As an outgrowth of these meetings tentative criteria were developed.

On March 15 and 16, 1967, an interactions seminar involving the local consortium and invited specialists from all over the country was held. At the seminar, tentative criteria and existing planning guides were reviewed and evaluated. The seminar was a soarce of many ideas and guidelines for use by the project staff in the development of a model facility planning guide. These ideas resulted from small and large group discussion in which concerns and suggestions were given, and important criteria to be followed in producing a model planning guide were delineated.

At this writing, Phase I of the project is near completion. Remaining activities in Phase I of the project are the completion of a basic model facility planning guide, the submission of a project proposal and the completion of a facility planning guide in a specific vocational area such as homemaking or health education. Phase II of the project is scheduled to begin in October 1967. During this second phase, various vocational and technical specialists throughout the country will be contracted to develop vocational-technical planning guides in accordance to the model guide produced by the project staff during Phase I of the project.

Wednesday Meeting, March 15, 1967

Generally, the group was in agreement that a vocational-technical facility planning guide should be a non-descriptive instrument which can be used cooperatively by various groups participating in facility planning to develop creative and imaginative solutions to the housing of desired educational programs. The purpose and utilization of the guide should be easily understood by educators, architects, and lay personnel.

The seminar participants displayed conflicting points of view over the general format of the guide (e.g., degree of open-endedness, providing alternative answers, etc.) and the extent to which the planning guide should deal with the philosophy and objectives of a vocational-technical school. There was also substantial disagreement on the number and kind of guides necessary for complete and adequate facility planning.

The Wednesday evening meeting was characterized by lengthy and spirited discussion. Some of the principle concerns and observations made were:

1. A facility planning guide ought to direct its attention to what questions should be asked of various kinds of people, and how the best use can be made of persons with particular kinds of expertise.

2. The guide should be adapted to the planning of a complete school which includes not only vocational laboratories and shops, but also the service and auxiliary areas which are necessary to house a complete educational program.

3. Planning guides should be a technique which enables the educator to communicate with the architect.

4. The planning guide ought to call attention to the alternatives in facility planning and to the educational and architectural consequences of the alternatives.

5. Floor plans should be avoided in planning guides; however, sketches and other ways of showing spatial, thermal, sonic, and visual relationships might be helpful.

6. In planning for vocational and technical facilities it is necessary to have a document which requires from the educator some information about a master or long-range plan which can be communicated to the architect through educational specifications.

7. In spite of the fact that primarily architects and educators will be involved in planning, it can not be overlooked that school board members will be looking for information, making

decisions and consequently looking at a document of this nature.

8. One belief is that the responsibility for development of educational specifications rests solely with the educator, and with that responsibility goes the further responsibility of contacting lay people who can assist him in working with the architect, with teachers, and with others who are involved in the educational planning for educational facilities.

9. It is not sufficient for a guide to merely stay out of the way of educational program; it must also implement the planning process so that better educational facilities will be developed.

10. There is a real question as to whether or not philosophy and objectives should appear in the facility planning guide and in what form. There may be a feeling that philosophy and objectives are only educational gobbledy gook and not necessary to a planning guide.

11. A planning guide should not express any specific educational philosophy, but should cause the persons who are writing specifications to develop their own.

12. Questions on philosophy and objectives appearing in a planning guide should not be loaded questions.

13. A well designed planning guide will work on all grade levels.

14. One planning guide might not be able to cover a range of educational specifications which would include junior high school, high school, and post high school vocational-technical education programs.

15. One planning guide might be concerned with roles of various kinds of personnel in the planning process.

16. A general guide may not be sufficient to assist adequately in planning because general guides do not usually get down to the fine detail that is necessary to do an efficient job of writing educational specifications.

17. Perhaps two distinct kinds of planning guides should be developed: an open-ended guide to stimulate thinking along the right route; and a directive one which offers specific help with thinking and planning.

18. A directed document is acceptable in the sense of direction in terms of alternatives, but not direction in terms of prescription.

19. The fact that equipment and machines these days cost so much more may mean that various vocational areas of necessity must share and cooperate in their use.

20. A check-list kind of guide alone is not enough; a guide should be open-ended enough to allow the planner to write a paragraph or two and to come up with something different than outlined in the questions.

Thursday Morning, March 16, 1967

On Thursday morning, the small groups were given some examples of existing planning guides for review and evaluation. The sample planning guides ranged from very general in nature to very specific and prescriptive documents.

After completion of the small group meetings in which the sample planning guides were discussed in light of the criteria established on Wednesday, the large group reconvened and the group committee chairmen gave reports on the results of their discussions. Important observations made by the committee chairmen who spoke in behalf of their groups included:

1. The pamphlet issued by the U.S. Office of Education on planning for vocational-technical facilities represents a good starting point; but a guide with more depth is necessary to develop useful educational specifications.

2. Planning guides which emphasize process and approach rather than describing or outlining standards are of more value.

3. Questions in a planning guide should lead to the making of the necessary decisions which have to be made in order to collect the information needed to write educational specifications.

4. The planning guide to be developed by the project staff should contain a pertinent annotated bibliography.

5. The planning guide to be developed should encourage the use of architects in the early planning stages, in the educational planning, and in the act of writing educational specifications.

6. The facility planning guide or guides to be developed must provide a way of stimulating thought while offering enough structure to guide thinking. They should also provide sufficient open-endedness to encourage planners to think and to add additional things.

7. The planning guide to be developed might need a fairly sizable appendix where some of the specifics could be included which would not appear in the context of the guide.

8. Perhaps two guides need to be developed: one general guide; one more specific guide.

9. It should be clearly indicated in the planning guide to be developed that part of the planning process includes working with

the instructional staff to get them to think creatively and to seek new and better ideas for the construction of facilities to house the desired educational program.

10. Although a team approach is needed in the development of planning guides, one person probably can write a better and a more unified document that a team. However, there should be available to the writer an advisory committee with diverse backgrounds.

Thursday Afternoon, March 16, 1967

On Thursday afternoon, the participants were again divided into three small groups; however, this time the groupings were more homogenous. Group one was composed of vocational-technical educators, group two was composed of school plant planners, and group three was composed of architects. The charge to these groups was to try to identify special problems and implications relative to planning vocational-technical facilities with respect to their own areas of competence. These groups met for a period of approximately two hours after which they met again in general session and an elected chairman for each of the groups gave a committee report. Among the concerns expressed were:

1. There is an immediate and urgent need for planning guides. During the next three or four years, Ohio will be spending approximately $163,000,000 for the construction of vocational-technical facilities.

2. The guide should be turned out quickly--possibly in loose leaf form and with the inclusions of the U.S. Office of Education pamphlet and the AVA (American Vocational Association) guide in the package.

3. The preliminary or model guide to be developed should include an annotated bibliography of all currently available guides in various vocational-technical education program areas.

4. The preliminary guide to be developed should be a general guide which would not focus on a specific area like health occupations; it would be a general guide for the writing of educational specifications.

5. The group composed of school plant planners were in agreement that one guide would suffice for the development of specifications for vocational-technical facilities at all levels.

6. The environmental conditions resulting from the design of a vocational school should help remove some of the stigma which has traditionally been attached to vocational education.

After a discussion of the above concerns and a brief summary of the two-day seminar by I.E. Valentine, Associate Director of the Vocational-Technical Facilities Project, the meeting was adjourned.

APPENDIX

CALENDAR OF EVENTS

VOCATIONAL-TECHNICAL EDUCATION FACILITIES PROJECT

Completed Events

January 9, 1967	Preliminary Meeting I: Future Trends in Vocational-Technical Education -- Dr. Melvin Barlow
January 18, 1967	Preliminary Meeting II: Need and Value of Educational Planning -- Dr. W. F. Clapp
January 30, 1967	Preliminary Meeting III: Single Course vs Curriculum Approach to Vocational-Technical Education -- Dr. Joseph Nerden
February 6, 1967	Preliminary Meeting IV: Form and Content of Educational Specifications to Better Meet the Needs of Architects -- Mr. John L. Reid
February 21, 1967	Preliminary Meeting V: The Relative Advantages of Core Vocational-Technical Facilities -- Mr. John Standridge
February 27, 1967	Preliminary Meeting VI: The Influence of New Instructional Techniques on Facility Planning -- Dr. Dwight Allen
March 15 and 16, 1967	Interaction Seminar to Establish Project Directions -- Invited Specialists

Projected Events

June 15, 1967	Summary Report of Project Activities
July 30, 1967	Completion of a Basic Model Facility Planning Guide
August 15, 1967	Submission of a Project Proposal
August 15, 1967	Completion of a Facility Planning Guide in Either the Homemaking or Health Education Vocational Area

Appendix B

Vocational-Technical Education Facilities Project

Members of Local Consortium

Robert E. Taylor, Director
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

Jerald Bromback, Coordinator
Vocational and Industrial Education
Findlay City Schools
Findlay, Ohio

M. J. Conrad, Head
Administration and Facilities Unit
School of Education
The Ohio State University
Columbus, Ohio

Calvin J. Cotrell, Specialist
Trade and Industrial Education
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

William Dean, Supervisor
Building Section
State Department of Education
State Office Building
Columbus, Ohio

James J. Foley
Kellam and Foley Architects
1621 West First Avenue
Columbus, Ohio

William J. Griffith, Director
Office of Campus Planning
The Ohio State University
Columbus, Ohio

John L. Kline, Architect
4103 Old Mill Road
R. R. #1
Springfield, Ohio

William R. Mason, Director
Technical Education
Cleveland City Schools
Cleveland, Ohio

Richard F. Meckley, Research Assistant
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

Aaron J. Miller, Specialist
Technical Education
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

D. R. Purkey, Supervisor
Construction and Work-Study Programs
Division of Vocational Education
State of Ohio
Department of Education
Columbus, Ohio

Byrl R. Shoemaker, Director
Division of Vocational Education
State of Ohio
Department of Education
Columbus, Ohio

James Spadafore, Director
Eastern Franklin County Joint Vocational School District
Columbus, Ohio

David M. Ward
Ward and Schneider Architects
1720 Euclid Avenue
Cleveland, Ohio

A. E. Wohlers, Professor
Administration and Facilities Unit
School of Education
The Ohio State University
Columbus, Ohio

Ivan E. Valentine, Consultant and Research Coordinator
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

The Vocational-Technical Education Facilities Planning Project
Stouffer's University Inn
Columbus, Ohio 43202

Sponsored by
The Center for Vocational and Technical Education, and the
Administration and Facilities Unit,
School of Education
The Ohio State University

Wednesday, March 15, 1967

1:00-1:30 - General Session

Welcome
H. Paul Snyder, Assistant to the Director, The Center for Vocational and Technical Education

Project Overview
M. J. Conrad, Head, Administration and Facilities Unit, School of Education, The Ohio State University

1:30-3:30 - Small Group Discussion: Major Criteria for the Evaluation of Vocational-Technical Education Facility Planning Guides.

Group I Chairman, C. J. Cotrell
Group II Chairman, W. J. Griffith
Group III Chairman, A. E. Wohlers

3:30-5:00 - General Session

Presiding - I. E. Valentine

Group Chairman report of small groups

Total Group Discussion

Rating Tentative Criteria

5:00-7:30 - Dinner Break

7:30-9:30 - General Session

Presiding - M. J. Conrad

Thursday, March 16, 1967

8:30-8:45 - General Session

Presiding - I.E. Valentine

8:45-10:30 - Small Group Meetings: Review, discussion, and evaluation of examples of selected planning guides (same groups composition as Wednesday afternoon)

Group I
Group II
Group III

10:30-11:30 - General Session

Presiding - M. J. Conrad

Group Chairmen Reports of small groups

Total Group Discussion

11:30-1:00 - Lunch

1:00-1:15 - General Session

Presiding - M. J. Conrad

1:15-2:15 - Special Interest groups to discuss problems and implications of the proposed planning guide.

Group A - Vocational-Technical Educators
Group B - School Plant Planners
Group C - Architects

2:15-3:00 - General Session

Presiding - I. E. Valentine

Panel of special interest group chairmen discuss results of small group meetings and identify special areas of concern.

3:00 - Adjourn

Appendix D

Interaction Seminar

The Vocational-Technical Education Facilities Planning Project
Stouffer's University Inn
Columbus, Ohio

Participants

PROJECT STAFF

Robert E. Taylor, Director
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

M. J. Conrad, Head
Administration and Facilities Unit
School of Education
The Ohio State University
Columbus, Ohio

Ivan E. Valentine, Consultant and Research Coordinator
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

Richard F. Meckley, Research Assistant
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

GROUP I

Calvin J. Cotrell, Chairman
Trade and Industrial Education
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

John L. Kline
Architect
Springfield, Ohio

Keith Stoehr
Director of Kenesha
Kenesha, Wisconsin

James D. MacConnell
Stanford University
Stanford, California

Stephen Knezevich
Associate Secretary, AASA
Washington, D. C.

Kenneth R. Widdall
Executive Secretary, NCSC
East Lansing, Michigan

Sylvia L. Lee
Home Economics
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

D. R. Purkey, Supervisor
Construction and Work-Study Programs
Division of Vocational Education
State Office Building
Columbus, Ohio

James Spadafore, Director
Eastern Franklin County Joint Vocational School District
Columbus, Ohio

William W. Chase
Department of Health, Education and Welfare
U. S. Office of Education
Washington, D. C.

Jerald Bromback, Coordinator
Vocational and Industrial Education
Findlay City Schools
Findlay, Ohio

GROUP II

Milton Larson
Colorado State University
Fort Collins, Colorado

William J. Griffith, Chairman
Research Associate
Offices of Campus Planning
The Ohio State University
Columbus, Ohio

William R. Mason, Director
Technical Education
Cleveland City Schools
Cleveland, Ohio

Louis Fibel
American Association of Junior Colleges
Washington, D. C.

Lloyd Waite, Director
School Plant
Caddo Parish School Board
Shreveport, Louisiana

John L. Cameron, Chief
Administrative Instructional Support Branch
U. S. Office of Education
Washington, D. C.

Teresina B. Thompson
Springfield Technical Institute
Springfield, Massachusetts

Aaron J. Miller
Technical Education
The Center for Vocational and Technical Education
The Ohio State University
Columbus, Ohio

GROUP III

A. E. Wohlers, Professor - Chairman
Administration and Facilities Unit
School of Education
The Ohio State University
Columbus, Ohio

William Dunton
Rock Hill
Missouri

David M. Ward
Ward and Schneider Architects
Cleveland, Ohio

Basil L. Hick
State Department of Education
Educational Facilities Planning
Albany, New York

Lou Lombardi
Chief Technical Institutes
State Department of Education
Hartford, Connecticut

C. W. McGuffey
Executive Director
Assoc. Consultants in Education, Inc.
Tallahassee, Florida

W. O. Wilson
University of New Mexico
College of Education
Albuquerque, New Mexico

Byrl R. Shoemaker, Director
Division of Vocational Education
Department of Education
State Office Building
Columbus, Ohio

Robert D. Balthaser, Supervisor
Business and Office Education Section
Division of Vocational Education
State Office Building
Columbus, Ohio

Robert D. Balthaser, Supervisor
Business and Office Education Section
Division of Vocational Education
State Office Building
Columbus, Ohio

Facility Needs to Accommodate Projected Enrollments
Vocational and Technical Education

Year	Enrollment	Enrollment Increased Over Previous Year	New Work Stations Needed 1/	Estimated Cost 2/
1964	4,566,393	---	---	---
1965	5,430,611	864,218	288,073	$ 532,935,050
1966	5,789,520	358,909	119,636	221,326,600
1967	6,368,472	578,952	192,984	357,020,400
1968	7,323,742	955,270	318,423	589,082,550
1969	8,205,828	882,086	294,029	543,953,650
1970	9,676,415	1,470,587	490,196	906,862,600
1975	14,000,000	4,323,585	1,441,195	2,666,210,750
Totals	---	9,433,607	3,144,536	$5,817,391.000

1/ Work stations needed are calculated on the basis of each station serving three different students in classes operated -- one in the morning, one in the afternoon, and one in the evening.

2/ Estimated costs for facilities are calculated by multiplying the number of new work stations needed by $1,850. Justification for the cost of $1,850 per student-work station is indicated as follows:

> A sampling of 20 contracts for school construction accomplished in 1965 in several states reveals a median cost of $1,890 per pupil. Cost data are based on 1965 contract data published in the Engineering News Record. Costs per pupil ranged from a state average of $882 in Texas, to $4,300 in Massachusetts. Average costs per square foot ranged from $11 in Kansas, to $25 in New York City and Hawaii. The norm was a little better than $20.
>
> Previous projections when correlated with states' reported construction indicated average costs of $1,850 per pupil or per work station, and $20 per square foot. These costs were derived from an estimated total of $85+ million for constructing 1,978 classrooms, shops, and laboratories.

Source: U.S. Office of Education, Bureau of Adult and Vocational Education.

Actual and Projected Enrollments and Percentages
Vocational and Technical Education

	1964		1965		1966		1970		1975	
Total Enrollments and Percentages	4,566,390	100.0	5,430,611	100.0	5,789,520	100.0	9,676,415	100.0	14,000,000	100.0
Enrollment by Type of Training Program	Enrollment	%	Enrollment	%	Enrollment	%	Enrollment	%	Enrollment	%
Agriculture	860,605	19.0	887,529	16.0	868,428	15.0	1,064,406	11.0	1,230,000 1/	9.0
Distribution and Marketing	334,126	7.0	333,342	6.0	405,266	7.0	870,875	9.0	1,440,000 2/	10.0
Health	59,006	1.0	66,772	1.0	173,[illegible]35	3.0	677,350	7.0	1,450,000 2/	10.0
Home Economics	2,022,138	44.0	2,098,520	39.0	1,968,437	34.0	2,322,340	24.0	2,100,000	15.0
Office	----	----	730,904	13.5	810,673	14.0	1,499,844	15.5	2,400,000	17.0
Technical	221,241	5.0	225,737	4.5	260,528	4.5	675,500	7.0	1,260,000	9.0
Trade and Industry	1,069,274	24.0	1,087,807	20.0	1,302,502	22.5	2,566,100	26.5	4,120,000	30.0

1/ 44% in farming and direct farm-related training, and 56% in occupations related to Agriculture.

2/ 40% in occupations related to Home Economics.

Source: U.S. Office of Education, Bureau of Adult and Vocational Education.

Appendix F

The Vocational-Technical Education Facilities Planning Project
Stouffer's University Inn
Columbus, Ohio 43202

CHECK LIST OF TENTATIVE CRITERIA FOR THE EVALUATION OF VOCATIONAL-TECHNICAL EDUCATION FACILITY PLANNING GUIDE

Following is a list of tentative criteria to assist the project staff in the development of a pilot guide for planning vocational-technical facilities. These specific criteria statements are organized under seven major criteria. Will you please read each specific criterion statement and put a check mark in the appropriate spaces to indicate your degree of agreement or disagreement with the statement. Use the following scale:

SA - Strongly agree
A - Agree
U - Undecided
D - Disagree
SD - Strongly disagree

A. A Facility Planning Guide Should Deal with the Process of Educational Planning in Addition to its Primary Purpose of Translating Program Elements into Educational Specifications.

	SA	A	U	D	SD
1. A facility planning guide should clearly indicate what it purports to do.					
2. A facility planning guide should explain how the guide should be optimally used.					
3. A facility planning guide should contain a check list of things to be done throughout the educational planning process so that the specific use of the guide can be put into its proper context.					
4. A facility planning guide should contain a comprehensive definition of educational specifications and clarify the difference between the planning guide and the resulting educational specifications.					

SA A U D SD

5. A facility planning guide should explain the process of how one moves from the planning guide to educational specifications. ___ ___ ___ ___ ___

B. A Facility Planning Guide Should be Educationally Adequate.

1. A planning guide should reflect the fact that vocational-technical education has basic goals similar to those of general education. ___ ___ ___ ___ ___

2. A planning guide should not deal with the philosophy and objectives of the school. ___ ___ ___ ___ ___

3. A planning guide should confront the educational planner with the broad issues and approaches to vocational education before considering facility questions. ___ ___ ___ ___ ___

4. In a planning guide, philosophy and objectives should be replaced by goals stated in terms of observable behaviors. ___ ___ ___ ___ ___

5. A planning guide should take into account that students of various mental abilities will be working in the same facilities. ___ ___ ___ ___ ___

6. A planning guide should encourage balance between the various curricular areas. ___ ___ ___ ___ ___

7. A planning guide should anticipate the possibility of cooperative programs between industry and vocational-technical schools. ___ ___ ___ ___ ___

8. A planning guide should allow for flexibility in time scheduling as well as in kinds of educational programs. ___ ___ ___ ___ ___

9. Different planning guides are needed for high school and post-high school facilities. ___ ___ ___ ___ ___

10. A planning guide should help planners develop educational specifications which will result in well-utilized spaces. ___ ___ ___ ___ ___

C. A Facility Planning Guide Should be a Stimulus to Creative Facility Planning.

1. A planning guide should encourage creativity and innovations in the instructional program to be housed in the planned facility. ___ ___ ___ ___ ___

SA A U D SD

2. A planning guide should help produce educational specifications which encourage creative architectural planning. ___ ___ ___ ___ ___

3. A planning guide should be a source of ideas which will motivate educational planners to creative thinking. ___ ___ ___ ___ ___

4. A planning guide should ask the necessary questions rather than supply pat answers to those questions. ___ ___ ___ ___ ___

5. A planning guide should not be a list of numerical standards or requirements. ___ ___ ___ ___ ___

6. A planning guide should be so contructed that it does not tend to produce common answers to planning questions and result in similar facilities. ___ ___ ___ ___ ___

7. A planning guide should stimulate teachers and other educational planners to do their own thinking. ___ ___ ___ ___ ___

8. A facility planning guide should not contain suggested floor plans. ___ ___ ___ ___ ___

9. A planning guide should help produce educational specifications which tell the architect the spatial and environmental conditions desired rather than how to provide them. ___ ___ ___ ___ ___

10. A planning guide should have "do's" and "don'ts" to prevent it from being too generalized. ___ ___ ___ ___ ___

11. A planning guide should be a form which minimizes recording time and permits maximal "think" time. ___ ___ ___ ___ ___

D. A Facility Planning Guide Should Anticipate Cooperative Personnel Planning Practices.

1. A planning guide should elicit points of view of a variety of knowledgeable people, both lay and professional. ___ ___ ___ ___ ___

2. A planning guide should encourage cooperative approaches with business and industry in the planning of vocational-technical education facilities. ___ ___ ___ ___ ___

3. A planning guide should encourage sharing among the various vocational subjects or clusters of vocational subjects. ___ ___ ___ ___ ___

SA A U D SD

4. A planning guide should reflect the fact that many pieces of equipment and machines can be used in a number of related vocational-technical areas. ___ ___ ___ ___ ___

5. A planning guide should reflect the fact that a teacher is a professional and can be helpful in the planning of educational facilities. ___ ___ ___ ___ ___

6. A planning guide should emphasize the need for educational program determination at the local level. ___ ___ ___ ___ ___

7. A planning guide should encourage new school districts to hire personnel to assist in the planning of vocational programs and physical facilities. ___ ___ ___ ___ ___

E. A Facility Planning Guide Should Encourage Complete Educational Planning.

1. A planning guide should not be limited to vocational-technical facilities but should include all instructional and service facilities. ___ ___ ___ ___ ___

2. A vocational planning guide need not consider facilities which are common to all schools, such as food service facilities and administrative offices, since adequate guides already exist for these areas. ___ ___ ___ ___ ___

3. A vocational planning guide should include all instructional and service areas which because of their location in a vocational-technical school would be totally different from such facilities in other shcools. ___ ___ ___ ___ ___

4. A planning guide should treat outdoor instructional activities and services as integral parts of program planning. ___ ___ ___ ___ ___

5. A planning guide should treat electrical and mechanical facilities only when such facilities have a bearing on the instructional program. ___ ___ ___ ___ ___

6. A planning guide should not only ask questons, but should provide some direction by offering all known possible alternative answers. ___ ___ ___ ___ ___

7. A planning guide should assist the educational planner in stressing to the architect those conditions which are hazardous to student safety. ___ ___ ___ ___ ___

F. A Facility Planning Guide Should Lead to Clear and Precise Educational Specifications. SA A U D SD

1. A planning guide should not be so general that it has no value to the educational planner in communicating with the architect. ___ ___ ___ ___ ___

2. A planning guide should be organized in outline form with easy checking scales to promote efficient use of planning time. ___ ___ ___ ___ ___

3. A planning guide should assist the educational planner in communicating with the architect concerning instructional techniques and course objectives. ___ ___ ___ ___ ___

4. A planning guide should assist the educational planner in making suggestions about the spatial intra- and inter-relationships of specific areas. ___ ___ ___ ___ ___

5. A planning guide should reflect the fact that the vocational school environment should simulate the future work environment. ___ ___ ___ ___ ___

6. A planning guide should include definitions of critical terms such as flexibility and core clusters. ___ ___ ___ ___ ___

G. A Facility Planning Guide Should Recognize Change as the Only Constant in the Educational Scene.

1. A planning guide should encourage new approaches to vocational-technical education on an experimental basis. ___ ___ ___ ___ ___

2. A planning guide should encourage planners to think beyond accepted or recognized educational patterns. ___ ___ ___ ___ ___

3. A planning guide should encourage provisions for future program changes and building expansions. ___ ___ ___ ___ ___

4. A planning guide should allow for flexibility in time scheduling as well as in kinds of educational programs. ___ ___ ___ ___ ___